1.1.4 PROPOSAL SELECTION PROCESS

Proposals will be evaluated, negotiated, selected and any award made in accordance with the criteria and procedures described below. The approach and procedures are those which are applicable to a competitively negotiated procurement whereby proposals are evaluated to determine which Proposal, if any, is most advantageous to Port Authority. Discussions and negotiations may then be carried out with Proposers determined to be reasonably susceptible of being selected for award of the Contract after which BAFOs may be requested. Port Authority, however, may select a Proposal for award without any discussions or negotiations or request for any BAFOs. Subject to Port Authority's right to reject any or all Proposals, the Proposer, if any, will be selected whose Proposal is found to be most advantageous to Port Authority, based upon consideration of the criteria discussed below.

1.1.4.1 EVALUATION COMMITTEE

Port Authority will establish an Evaluation Committee for the RFP. The Evaluation Committee, which may be composed of various subcommittees, will initially determine the responsiveness of a Proposal, evaluate all Proposals, determine the responsibility of each Proposer, score the Proposal, conduct meetings and assist in selecting the Proposer, if any, that may be awarded the Contract.

1.1.4.2 PROPOSAL EVALUATION CRITERIA

1) The following is the criteria by which Proposals from responsible Proposers will be reviewed and evaluated for purposes of determining which is most advantageous for Port Authority and to make any selection of a Proposal for potential award of the Contract. Any exceptions, conditions, reservations or understandings explicitly, fully and separately stated as a Proposal deviation and which does not cause Port Authority to reject a Proposal will be evaluated according to the respective evaluation criteria and/or sub-criteria which they affect.

   The criteria to be used in reviewing and evaluating the Proposals and used to establish a score for the Proposals is as follows:

   a) DBE Utilization: Each Proposal will be evaluated based upon the proposed use of DBEs by the Proposer.

   b) Experienced Record and Qualifications: The following, as well as the other information identified Subsections 1.1.3.2(8)-(9) to be supplied by the Proposer, will be used to evaluate each Proposer's experience and qualifications to perform the Work:

      (i) Sufficient financial strength and resources to finance the Work and complete the Contract in a satisfactory manner as measured by:

         (A) The Proposer's supplied financial statements.

         (B) Ability to secure required bonds.

      (ii) Evidence that the Proposer has human and physical resources sufficient to perform the Contract and assure delivery of all buses and other items required to complete the Work within the time specified in the Contract Documents including:

         (A) Engineering, management and service organizations with sufficient personnel and requisite disciplines, licenses, skills, experience and equipment to complete the Contract as required and satisfy any engineering or service problems that may arise during the warranty and reliability periods.

         (B) Adequate manufacturing facilities sufficient to produce and factory-test buses on schedule.

         (C) A spare parts manufacturing, procurement and distribution system sufficient to support bus maintenance without delays and service organization with skills, experience and equipment sufficient to perform all warranty, reliability and on-site work.

      (iii) Evidence of satisfactory experience, performance and integrity on similar contracts and making deliveries on time, meeting specifications and warranty provisions, parts availability and the steps the Proposer took to resolve any judgments, liens, reliability defects and warranty claims.

      (iv) Evidence of sufficient capabilities to perform the Work which will include the Proposer's size and presence in the transportation industry, the Proposer' commitment to further work of this nature, and the Proposer's ability to bring adequate people to staff the Work.

   c) Technical Proposal(s): The Technical Proposal will be evaluated, to determine the degree to which performance requirements of Part 5: Technical Specifications have been satisfied. The evaluation will be based upon the required information for each of the subsystems and other information identified in Subsection 1.1.3.2(10) to be supplied by the Proposer, as well as the Technical Proposal Worksheet (EXHIBIT 10).

   d) Organization and Management Plan: The Proposal will be evaluated based on the Proposer's proposed approach to perform the Work, proposed Schedule and proposed quality assurance and training plans and project team, as well as the other information identified in Subsection 1.1.3.2(11) to be supplied by the Proposer.

   e) Summary of Prices: The Proposal will be evaluated based on the information submitted as part of the Summary of Prices as identified in Section 0.

2) The information submitted for each criteria will be scored on a scale of zero to ten. The score for the various criteria will then be multiplied by the weighted factors set forth for the criteria on the Proposal Evaluation Rating Sheet (EXHIBIT 13).

1.1.4.3 EVALUATION PROCEDURES

1) Proposals will be reviewed for conformance with the instructions and requirements of the RFP. Proposals that do not comply with the referenced instructions and requirements and do not include the required information, may be rejected as insufficient and will not be further considered. Port Authority reserves the right to request a Proposer to provide any missing information and make corrections. Submittal of a Proposal shall signify that the Proposer has accepted the whole of the Contract Documents, except such conditions, exceptions, reservations or understanding explicitly, fully and separately stated in the Proposal. Such conditions, exceptions, reservations or understanding which do not result in the rejection of a Proposal are subject to evaluation under the criteria set forth in Section 1.1.4.2.

2) Port Authority will select for award, if any, the highest ranked Proposal from a responsible Proposer, qualified pursuant to the RFP, which does not render the procurement financially infeasible and is determined to be the most advantageous to Port Authority based upon consideration of the Proposal evaluation criteria set forth in Section 1.1.4.2.

3) The following will be the steps for reviewing and evaluating the Proposals:

   a. Proposals will not be publicly opened. All Proposals and evaluations will be kept confidential throughout the evaluation, negotiation and selection process, until award, if any, of the Contract.

   b. Proposals will be reviewed and evaluated by Port Authority's Evaluation Committee to determine the responsiveness of a Proposal to the requirements of the RFP s and the responsibility of a Proposer. Any Proposals found not to be responsive, or Proposers whom Port Authority finds not to be responsible, will not be further considered for award of the Contract. Final determination of the responsiveness of a Proposal will be made upon the basis of the Proposal. Final determination of a Proposer's responsibility will be made on the basis of the Proposal, any information submitted upon Port Authority's request, information submitted in a BAFO, information resulting from Port Authority's inquiry of Proposer's references and Port Authority's knowledge of the Proposer. Port Authority's determination in regard to the responsiveness of a Proposal and the responsibility of a Proposer shall be final and binding on the Proposers.

   c. Each Proposal from a responsible Proposer found to be in compliance with the RFP requirements will be evaluated in accordance with the criteria set forth in Section 1.1.4.2. The following are the minimum requirements that must be met for a Proposal to be considered for award of the Contract:

      (i) Evidence that the human and physical resources are sufficient to perform the Contract and assure delivery of all buses, equipment and other items within the time specified in the Contract Documents, to include:

         A. Engineering, management and service organizations with sufficient personnel and requisite disciplines, licenses, skills, experience, and equipment to complete the Contract as required and satisfy any engineering or service problems that may arise during the warranty period; and

         B. Adequate manufacturing facilities sufficient to produce and factory-test equipment on schedule.

      (ii) Evidence that Proposer is qualified in accordance with Part 3: Quality Assurance.

      (iii) Initial review of Technical Proposal deviations to identify any items which would cause the entire Proposal to be considered outside the competitive range.

      (iv) Required certifications per Section 1.1.3.2.

      (v) Sufficient financial strength and resources and capability to finance the Work and complete the Contract in a satisfactory manner as measured by:

         A. Ability to secure required bond(s) as evidenced by a letter of commitment from an underwriter confirming that the Proposer is capable of providing a bond for the required amount; and

         B. Willingness of any parent company to provide the required financial guaranty evidenced by a letter of commitment signed by an officer of any parent company having the authority to execute the parent company guaranty.

      (vi) The Summary of Prices will be assessed for affordability.

      (vii) Evidence of satisfactory performance and integrity on contracts in making deliveries on time, meeting specifications and warranty provisions and parts availability. Any and all judgments, liens, fleet defects history, and warranty claims shall be listed together with the steps Proposer took for resolution. Information must include client references.

      (viii) A spare parts procurement and distribution system sufficient to support equipment maintenance without delays and a service organization with skills, experience, and equipment sufficient to perform all warranty and on-site work.

   The evaluation will be undertaken (Preliminary Rating) utilizing the Proposal Evaluation Rating Sheet (EXHIBIT 13).

d. After the Preliminary Rating, the responsible Proposers whose Proposals are determined by Port Authority to still be reasonably susceptible of being selected for award of the Contract may be requested by Port Authority to respond, in writing, to certain questions. Each such Proposer may also be invited for a private interview and discussion with Port Authority to discuss answers to written or oral questions, to assure responsiveness of its Proposal and to discuss its Proposal.

In the event that any such Proposal contains conditions, exceptions, reservations or understandings to any requirements of the Contract Documents, said conditions, exceptions, reservations or understandings may be discussed during these meetings. Port Authority, however, shall have the right to reject any and all conditions, exceptions, reservations and/or understandings and instruct the Proposer to amend its Proposal and to remove said conditions, exceptions, reservations and/or understandings. Any Proposer failing to do so may cause Port Authority to reject such Proposal.

e. Port Authority reserves the right to conduct visits to inspect Proposer's and/or its proposed subcontractor's and/or supplier's facilities and/or transit systems for which the Proposer has supplied the same or similar buses or equipment.

f. After any interviews have been completed, each responsible Proposer whose Proposal is determined to still be reasonably susceptible of being selected for award of the Contract may be afforded the opportunity to amend its Proposal and make a BAFO. The request for BAFOs, if any, will include:

(i) Notice that all prior discussions and negotiations are to be included in the BAFO;

(ii) Notice of any changes to the RFP or other Contract Documents;

(iii) Notice that this is the opportunity for submission of a BAFO;

(iv) A common date and time for submission of written BAFOs;

(v) Notice that if any modification to a BAFO is submitted, it must be received by the date and time specified for the receipt of BAFOs and is subject to the late submissions, modifications and withdrawals of Proposals provisions of the RFP; and

(vi) Notice that if a Proposer does not submit a BAFO, Port Authority may consider its Proposal non-responsive and ineligible for award of the Contract.

Any modifications to the initial Proposal made by a Proposer in its BAFO shall be expressly identified in its BAFO. BAFOs will be evaluated by Port Authority according to the requirements and criteria set forth in Section 1.1.4.3 (Final Rating).

Port Authority will make the appropriate adjustments to the initial scores for each criteria which has been affected by any Proposal modifications made by the BAFOs. Port Authority will then choose for potential award of the Contract, the Proposer, if any, whose Proposal Port Authority finds to be most advantageous to Port Authority based upon the evaluation criteria.

1.1.4.4 FINALIZATION OF CONTRACT

Port Authority will meet, as necessary, to finalize the proposed Contract with the responsible Proposer which submits the Proposal which is determined to be most advantageous to Port Authority based upon the evaluation criteria. In the event that Port Authority cannot finalize a satisfactory Contract with the highest rated responsible Proposer, discussions will be terminated with that Proposer and Port Authority may then proceed with meetings to finalize the proposed Contract with the next highest rated Proposer. The above may continue until satisfactory contractual arrangements with a Proposer has been reached.

1.1.4.5 CONTRACT AWARD

The proposed Contract resulting from discussion described in Section 1.1.4.4 above will be ultimately presented to the Chief Executive Officer of Port Authority for review and his recommendation to Port Authority's Board for approval. Port Authority's staff is not empowered to enter into a contract without the formal authorization of Port Authority's Board.

1.1.4.6 FAILURE TO EXECUTE CONTRACT

Failure of the Proposer to whom the Contract is awarded to execute the Contract or to submit the required bonds, shall be cause for cancellation of the award. The Proposer hereby agrees to, and shall, reimburse Port Authority for all damages arising from said default.

1.1.4.7 ACCEPTANCE/REJECTION OF PROPOSERS

Port Authority reserves the right to reject any or all Proposals or, to enter into discussions with one or more Proposers. Port Authority also reserves the right to make an award to a Proposer whose Proposal it judges to be most advantageous to Port Authority, without conducting any written or oral discussions with any Proposer or the solicitation of any BAFOs. Port Authority reserves the right to consider any specific Proposal which is conditional or not prepared in accordance with the instructions or requirements of this RFP to be non-responsive. Port Authority reserves the right to waive any defects, or minor informalities or irregularities in any Proposal which has not materially affected the Proposal.

1.1.4.8 CANCELLATION OF PROCUREMENT

Port Authority reserves the right to cancel the procurement and not award the Contract for any reason whatsoever, at any time, before the Contract is fully executed and approved on behalf of Port Authority.

1.1.4.9 AVAILABILITY OF FUNDS

1) The procurement is subject to the availability of funds. Port Authority's obligations under the Contract, if awarded, is contingent upon the availability of appropriate funds from which payment for the Contract can be made. No obligation on the part of Port Authority for any payment shall arise until funds are made available to Port Authority for the Contract and until the Contractor receives written notice of such availability from Port Authority. Any award of the Contract hereunder will be conditioned upon said availability of funds for the Contract.

2) Additionally, Port Authority may utilize, in part, American Recovery and Reinvestment Act ("ARRA") funds for this procurement. If ARRA funds are utilized, the Proposer, if any, to whom the Contract is awarded, shall provide to Port Authority all information required for ARRA reporting by the requested due date. Such information may include, but not be limited to, that which is requested by FTA or any other governmental entities, applicable party including direct job hours worked, payroll dollars, job descriptions and other related information.

1.1.4.10 PORT AUTHORITY PROTEST PROCEDURES

1) Purpose

Any actual or prospective Proposer who believes it is aggrieved in connection with the solicitation or award of a contract may file a protest with Port Authority. The procedures for submitting such protests are set forth herein.

2) Definitions

For the purposes of this Section, the following definitions apply:

a. Assistant General Manager - Port Authority's Chief Financial Officer

b. Protesting Proposer- Any actual or prospective Proposer who files a protest in connection with the solicitation or award of the contract.

c. Interested Party - All Proposers on the contract and any subcontractor or supplier at any tier who shows that it has a substantial economic interest in a provision or in the interpretation of such a provision of the Contract Documents.

3) Grounds For Protest

A Proposer may file a protest which alleges that:

a. Port Authority failed to follow its prescribed procedures in connection with the contract; or that

b. Port Authority has violated a Federal, state or local law in connection with the contract; or that

c. Port Authority has abused its discretion in making a determination such as deciding the responsiveness of a Proposal or the responsibility of a Proposer.

4) Contents Of Protest

A Proposer desiring to file a protest may submit a written protest to the Assistant General Manager, as designee of Port Authority's Chief Executive Officer. The protest must include:

a. The name and address of the Protesting Proposer;

b. Identification of the contract being protested;

c. A detailed and factual statement of the grounds for protest;

d. Supporting documentation; and

e. The desired relief, action or ruling.

5) Time For Filing

a. Protests alleging a restrictive specification or improprieties in the proposal solicitation which are or should be apparent prior to the due date for the submission of Proposals must be received by Port Authority not later than three working days prior to the due date for the submission of proposals.

b. All other protests must be received by Port Authority within seven working days after the cause of the protest should reasonably have been known to the Protesting Proposer, but in any event not later than seven (7) working days after Port Authority's Board has authorized the award of the contract.

c. Any additional information relevant to the protest requested by Port Authority from the Protesting Proposer will be submitted to Port Authority as expeditiously as possible, but in no case later than three (3) working days after receipt of such request by the Protesting Proposer.

d. The time limits set forth in this Section must be strictly adhered to by the Protesting Proposer. Port Authority will not consider a protest or additional documentation which is not received by the Assistant General Manager within the time periods set forth in this Section.

6) Action By Port Authority

a. If the award of the contract has already been made before a timely protest is received, Port Authority will notify the Proposer that was awarded the contract of the protest, and will delay the issuance of any notice to proceed until the protest has been addressed.

b. If the award of the contract has not already been made, but Proposals have been received, Port Authority will:

(i) notify all Proposers and,

(ii) not make a recommendation to the Port Authority Board for the award of the contract until a written response to the protest has been prepared by the Assistant General Manager and such response has been transmitted to the Protesting Proposer.

c. If a timely protest is filed before the due date for the submission of Proposals, Port Authority will notify all Proposers from whom Proposals have been received of the filing of a protest and that Proposals will not be opened until the protest has been resolved.

d. The filing of a protest will not alter the date on which Proposals are due. Proposals will not, however, be opened by Port Authority until such times as the protest is resolved.

e. If Port Authority determines that the protest has merit and that Proposals must be re-submitted, Port Authority will set a new date for the submission of Proposals.

f. Port Authority shall make a decision regarding the protest and send notice of that decision to the Protesting Proposer within sixty (60) working days following receipt of the protest by Port Authority. The notice of the decision shall outline the factors upon which the decision is based.

g. If the relief, action or ruling requested by the Protesting Proposer is granted, Port Authority will take appropriate actions to amend the proposal solicitation or terminate the award process.

7) Furnishing Information On Protests

Port Authority shall, upon request, make available to any Interested Party information bearing on the substance of the protest which has been submitted by the Protesting Proposer, except to the extent that withholding of information is required by law or regulation. Any comments on this material must be received by Port Authority within three (3) working days, but in no event will a decision be delayed because an Interested Party has not had an opportunity to provide comments.

8) Conference

A conference on the merits of the protest with the Assistant General Manager may be held if the Assistant General Manager deems such a conference to be necessary. Interested Parties may request, and at the discretion of the Assistant General Manager may be invited, to attend the conference.

1.1.5 SCOPE OF WORK

See the Contract Documents

1.1.6 EXHIBITS/CONTRACT FORMS

The Exhibits referenced in this RFP and the various contract forms follow hereafter.

EXHIBITS & CONTRACT FORMS

RFP NO. 4000

EXHIBIT 1

REQUEST FOR PRE-PROPOSAL QUESTION OR CLARIFICATION

This form must be used for requested clarifications, and must be submitted by no later than five (5) business days before the due date for Proposals set forth in the "Solicitation Schedule" (Section 1.1.1.4).

REQUEST #:		PROPOSER:
RFP #::	PAGE:	SECTION:
QUESTIONS/CLARIFICATION:		
PORT AUTHORITY RESPONSE:		

NEW FLYER

SECTION 06 - APPENDIX
TAB #6: Exhibit 2
Form for Proposal Deviation

A complete listing of all proposed deviations and clarifications is attached. All requisite supporting documentation has been included behind each individual request, where applicable.

Please refer to the attached documentation.

ALTERNATE COMPONENTS AND SUBSYSTEMS LIST
(Proposed Equals)

ITEM NUMBER	SECTION NUMBER	ITEM	✓	COLUMN "A" AS SPECIFIED	✓	COLUMN "B" PROPOSED EQUAL
1	5.2.1.1.3	Paint	✓	Dupont Imron		
2	5.2.1.1.4	Decals	✓	As Specified		
3	5.2.1.2.7	Corrosion Protection	✓	As Specified		
4	5.2.1.2.7.4	Protective Treatment	✓	PPG Cornubield		
5	5.2.1.2.8	Towing		As Specified	✓	Ref Dev #9 & 116
6	5.2.1.4	Interior Panels		As Specified	✓	Ref Dev #14, 15 & 16
7	5.2.1.7.3	Wheel Housing	✓	As Specified		
8	5.2.1.9.3	Engine Compartment Door	✓	As Specified		
9	5.2.2.1.3	Door Actuators	✓	U S Vapor		
10	5.2.2.2.1	Windshield Wipers	✓	Sprague		
11	5.2.2.3.1	Exterior Lighting		12 Volt - LED	✓	Ref Dev #32, 33, 34, 35
12	5.2.2.3.3.	Passenger Lighting		I/O Controls LED	✓	Pretoria LED - Ref Dev #36, 37, 38
13	5.2.2.3.5	Driver's Controls		As Specified	✓	Ref Dev #39-42
14	5.2.3.1	Trim Materials	✓	As Specified		
15	5.2.3.1.1	Trim Panels		As Specified	✓	Ref Dev #43
16	5.2.3.1.2	Headlining		As Specified	✓	Ref Dev #49
17	5.2.3.1.4	Rear Bulkhead	✓	As Specified		
18	5.2.3.2.1	Seats		As Specified	✓	Ref Dev #50 & 51
19	5.2.3.3	Driver's Seat	✓	As Specified		

[BAFO-Deviation]

20	5.2.3.3.2	Seat Foam	✓	Polyurethane		
21	5.2.4.4	Roof Hatches	✓	Spheros		
22	5.2.6	Ancillary Features	✓	As Specified		
23	5.2.6.2.1	External Mirrors	✓	B & R	✓	Ref Dev #59
24	5.2.6.2.2	Inside Mirrors		As Specified	✓	Ref Dev #60
25	5.2.6.3.1	Passenger Assist Straps	✓	Allegheny Cable		
26	5.2.6.4.1	Destination Sign	✓	Twin Vision all LED	✓	Ref Dev #62 & 63
27	5.2.6.7.1	Wheel Chair Ramp		Lift-U	✓	NFIL Ramp - Ref Dev #64, 65, 66
28	5.3.1.2.2.	A/C Compressor Removal	✓	As Specified		
29	5.3.1.2.2	Service Lines	✓	Aeroquip 300	✓	Ref Dev # 70
30	5.3.1.2.2	Primary Fuel Filter	✓	Davco Pre 384		
31	5.3.1.2.5	Secondary Oil Filter (Engine)	✓	Spinvar II Model 976		
32	5.3.1.3.1	Engine	✓	Cummins ISL-280		
33	5.3.1.3.1	Air Cleaner		Donaldson 13140044	✓	Donaldson - Ref Dev # 72
34	5.3.1.3.2	Cooling System	✓	As Specified		EMP Mini Hybrid – Ref Dev #142
35	5.3.1.3.3	Transmission	✓	Voith D864.5E	✓	Ref Dev # 86-87
36	5.3.1.3.4	Drive Shaft		Spicer Glidecast 1710	✓	1710 Series from All Power Transmission
37	5.3.2.1	Front Axle		Meritor	✓	M.A.N. - Ref Dev # 89 & 90
38	5.3.2.2	Rear Axle		Meritor 71000 Series	✓	M.A.N. - Ref Dev # 89 & 90
39	5.3.3.1	Leveling Valves	✓	Barksdale		
40	5.3.3.2.1	Air Springs	✓	Firestone		
41	5.3.3.2.2	Shock Absorber	✓	Koni 90 Series		
42	5.3.4.3	Steering Column	✓	Douglas		
43	5.3.5.1.1	Brakes	✓	S-CAM	✓	Disc Brakes on 40' – Ref Dev

[BAFO-Deviation]

						93
44	5.3.5.1.1	Actuators	✓	MGM L-T	✓	MGM (Type 30, MJB & MJS) – Ref Dev #94 & 96
45	5.3.5.1.1	Slack Adjusters	✓	Accessaric Haldex	✓	Slack adjusters not applicable to disc brakes(40')
46	5.3.5.1.4	Air System	✓	As Specified		
47	5.3.5.1.4	Air Compressor	✓	As Specified		
48	5.3.5.1.4	Air Line Color Code	✓	As Specified		
49	5.3.5.1.4	Air Tank Valves		John Brooks	✓	Bendix drain valves - Ref Dev #101
50	5.3.5.1.5	Air Dryer	✓	As Specified	✓	QBA 60 under development by Graham White – Ref Dev 104
51	5.3.6.1.1	Wheels	✓	ALCOA Dumbrite		
52	5.3.6.2.2	Fuel Filter	✓	Enco-Wheaton		
53	5.3.6.4	Bumper	✓	Ramsee Rte Help "S"	✓	Ref Dev #107
54	5.3.6.4.2	Electrical Components	✓	As Specified		
55	5.3.6.5.2	Electrical Control System		DINEX 03	✓	Vansec – Ref Dev #109
56	5.3.6.5.4	Wiring Color Code	✓	As Specified		
57	5.3.6.5.2	Batteries	✓	As Specified		
58	5.3.6.6.4	Fire Suppression	✓	Amerex		
59	5.3.6.6.6	Towing Connector		Midland-Berg	✓	Cole Hersee
60	5.3.6.6.7	Alternator	✓	Niehoff		EMP & Niehoff – Dev #117
61	5.3.6.6.8	Regulator	✓	As Specified		
62	5.3.6.6.9	Equalizer		Vansec EM-70	✓	Vansec 78-100M
63	5.3.7.1	Air Conditioning	✓	Thermo-King		
64	5.3.7.1	A/C Condenser Location	✓	As Specified		
65	5.3.7.2	A/C Controls	✓	As Specified		

[BAFO-Deviation]

66	5.3.7.4	Air Return Grill	✓	As Specified		
67	5.3.8.1	Radio Equipment	✓	As Specified		
68	5.3.8.2.3	Radio Antenna	✓	Sinclair		
69	5.3.8.2	Radio Installation	✓	As Specified		

[BAFO-Deviation]

NEW FLYER

COMMERCIAL DEVIATIONS & CLARIFICATIONS

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 1 Proposer: New Flyer of America

RFP #: 4000 Page: 129 Section: 4.8.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Repair Performance)
The Contractor is responsible for all warranty-covered repair work.
At its discretion, Port Authority 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.

New Flyer's Deviation/Clarification:

New Flyer's will work with the property on warranty covered repairs, but the majority of the warranty repairs should be performed by the Procuring Agency's personnel with reimbursement by the Contractor. All Major Components such as Engine, Transmission, HVAC, and Destination Signs must have warranty repairs performed by an authorized dealer of the supplier of these If the Port Authority elects to do the repairs solely by themselves, the warranty can be voided.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 2 Proposer: New Flyer of America

RFP #: 4000 Page: 86 Section: 2.8.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Sale of Buses/Other Items - Manuals)
In addition to the other requirements of the Contract Documents, the following items Shall be furnished to Port Authority by the Contractor upon the delivery of each bus: 2), 3), 5), 7), 8)

New Flyer's Deviation/Clarification:

New Flyer published bus Parts and Service manuals are not published and supplied upon delivery of each bus. These deliverables will be supplied as follows:

1. NF Sample Bus Manuals – With BID Proposal

2. NF Draft Bus Operator's guides, Electrical/Air/Hyd System Schematics, Service & Parts Manuals - With Pilot Bus Delivery.

3. NF Final Bus Operator's guides, Electrical/Air/Hyd System Schematics, Service & Parts Manuals – 10 Business Days after last production bus Delivery

3. OEM component supplier published manuals – With Pilot Bus Delivery or soon after receipt from each OEM supplier.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 3 Proposer: New Flyer of America

RFP #: 4000 Page: 89 Section: 2.10.6

Complete Description of Deviation:

Port Authority Specification Requirement:

(Payment/Contract Sum)
No price adjustment clause included in RFP documents.

New Flyer's Deviation/Clarification:

New Flyer requests the inclusion of the following clause to cover the Proposer for any regulatory change adjustments that may occur during and after the term of the contract:

"Notwithstanding else contained herein, in the event that a price adjustment is required in respect of changes that are mandatory as a result of legislation or regulations that become effective after the time set for receipt of proposals, such price adjustment shall be negotiated in good faith by Port Authority and the Contractor."

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 4 Proposer: New Flyer of America

RFP #: 4000 Page: 257 Section: 5.5.4.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Damage by Contractor/Defective Work & General Requirements & Field Service Engineer)
The Contractor shall provide full and competent engineering services to handle any, and correct all, problems associated with the performance of the coaches. At least one qualified service engineer shall be available in the vicinity of the Pittsburgh area to render this service.

These services shall be provided prior to, during, and after delivery of vehicles to Port Authority. System support services include, but are not limited to education/training, publications, field service engineering, spare parts, special tools and equipment for maintenance, fault diagnosis, and testing.

The Contractor shall have competent technical personnel available to assist Port Authority in any problem which Port Authority might have on the buses, after delivery, at no additional cost to Port Authority. This does not relieve the Contractor of responsibilities under the Warranty Provisions of Section 4.0. The Contractor's field service engineer shall be capable of performing adjustments to each bus as required during the warranty period and providing technical support to Port Authority during revenue service operations. Such personnel shall be available to perform these tasks within twenty-four hours after being requested to do so by Port Authority at no additional cost to Port Authority.

New Flyer's Deviation/Clarification:

New Flyer's RPSM (Regional Product Support Manager) will provide service and engineering support via phone or e-mail within 24 hours. Some hands-on support may not be available for up to five (5) business days if the assigned RPSM is committed to other property visits/issues.

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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Deviation #: 5 Proposer: New Flyer of America

RFP #: 4000 Page: 126 Section: 4. Warranty Provisions

Complete Description of Deviation:

Port Authority Specification Requirement:

(4.1.3 Subsystems and Component s)
COACH, SUBSYSTEM AND COMPONENT WARRANTY
Which ever Occurs First

Engine and associated cooling system(s) – 5 years/300,000 miles

Transmission and associated cooling system(s) – 5 years/300,000 miles

Brake System (valves, controls, accessories and compressor) – 3 years/150,000 miles

Air Compressor and Dryers – 3 years/150,000 miles

Air Dryer – 3 years/150,000 miles

Engine Starter and Drive – 2 years/300,000 miles

Alternator – 3 years/150,000 miles

Driver's Seat – 1 year/75,000 miles

HVAC System – 3 years
HVAC Compressor – 4 years

Wheelchair Loading Device – 3 years

COACH, SUBSYSTEM AND COMPONENT EXTENDED WARRANTY
Which ever Occurs First

Starter and Drive – 3 years/150,000 miles
Basic Bus – 1 year/75,000 miles

[BAFO-Deviation]

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Basic Body Structure – 9 years/450,000 miles
Driver's Seat –1 year/75,000 miles

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing the following warranties: (all warranties times/mileages are whichever occurs first)

Engine and associated cooling system(s) - New Flyer's proposal is based on providing a pass-thru Cummins manufacturer warranty. Please see attached Cummins warranty documents for coverage and exclusions.
Best & Final Offer Revision:
Warranty parchment has been attached and was not provided with our original proposal submission.

Engine cooling system ~~1 year/50,000 miles~~
Best & Final Offer Revision:
EMP (All Electric) = 2 years/100,000 miles (100% parts and labor)
General Thermasys (Hydraulic) = 2 years/100,000 miles (parts and labor – NOTE: labor is covered up to three (3) hrs. per claim and must be pre-authorized before repair is performed.)

Transmission and associated cooling system(s) - New Flyer's proposal is based on providing a pass-thru Allison manufacturer warranty. Please see attached Allison warranty document for coverage and exclusions. ~~Transmission cooling system 1 year/50,000 miles~~
Best & Final Offer Revision:
Voith = 2 years, unlimited miles (100% parts and labor)
Allison (hybrid) = 2 years, unlimited miles (100% parts and labor)
BAE (hybrid) = 2 years, unlimited miles (100% parts and labor)
Warranty parchment has been attached and was not provided with our original proposal submission.

Brake System (valves, controls, accessories and compressor) – ~~1 year/75,000 miles~~
Best & Final Offer Revision:
New Flyer will warrant the brake system for three (3) years or 150,000 miles (whichever occurs first), in accordance with the original solicitation.

Air Compressor – ~~2 years/unlimited~~
Best & Final Offer Revision:
New Flyer will warrant the air compressor for three (3) years or 150,000 miles (whichever occurs

[BAFO -Deviation]

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

first), in accordance with the original solicitation requirements.

Air Dryer – ~~1 year/100,000 miles~~
Best & Final Offer Revision:
New Flyer will warrant the air dryer for three (3) years or 150,000 miles (whichever occurs first), in accordance with the original solicitation.

Engine Starter – 1 year/100,000 miles (parts only)
Best & Final Offer Revision:
Quoted separately from the bus unit pricing per Port Authority requirements. Please refer to the Price Proposal submission for the required cost.

Engine Drive – 1 year/50,000 miles
NOTE: We priced the optional warranty, per specification.
Best & Final Offer Revision:
Please refer to the comment above.

Alternator – ~~2 years/unlimited~~
Best & Final Offer Revision:
EMP Power 450 alternator = 2 years/100,000 miles (100% parts & labor)
Niehoff C803 alternator (ISL 60' hybrids) = 2 years/100,000 miles (100% parts & labor)
Niehoff C703 alternator (diesels and if used) = 3 years/150,000 miles (100% parts & labor)
Niehoff C706 alternator (ISB 40' hybrid) = = 2 years/100,000 miles (100% parts & labor)

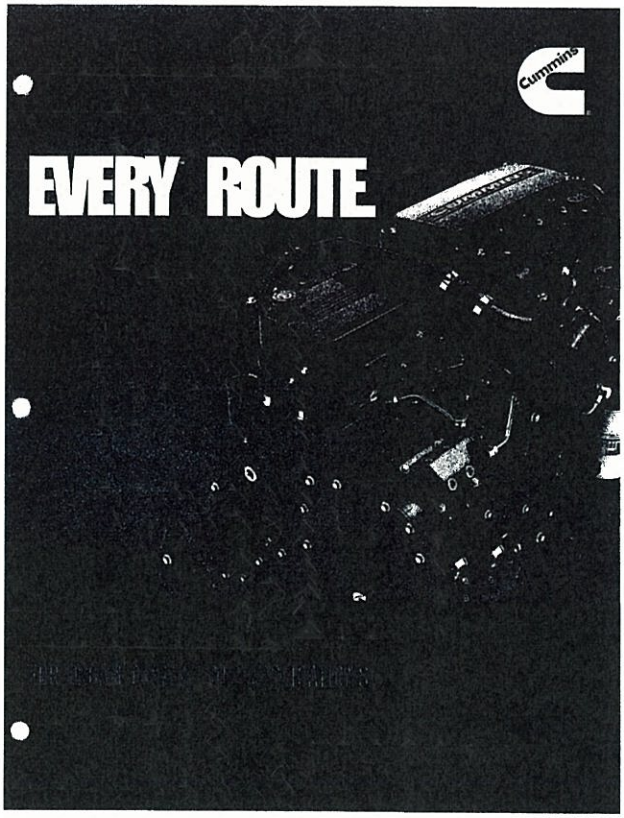
Driver's Seat - New Flyer's proposal is based on providing a pass-thru Recaro manufacturer warranty. Warranty excludes wearable components such as fabric and foam. Please see attached Recaro warranty document for more details on coverage and exclusions.
NOTE: We priced the optional warranty, per specification.

HVAC System and Compressor - New Flyer's proposal is based on providing the standard OEM HVAC system warranty which is 2 years unlimited miles on those components supplied by the OEM. An extended warranty, which will provide a total of 3 years unlimited miles, will be provided at a cost to the customer on components specified by the manufacturer's warranty document
Best & Final Offer Revision:
Warranty parchment has been attached and was not provided with our original proposal submission.

Wheelchair Loading Device – 1 year/50,000 miles

Clarified During 6/7/2010 Teleconference:
Engine warranty/coverage will be for a period of 5 years / 300,000 miles.
Transmission warranty/coverage will be for a period of 5 years / 300,000 miles

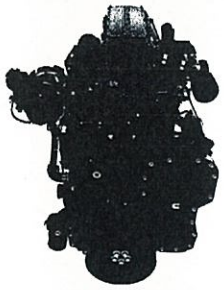
[BAFO



[BAFO]

URBAN TRANSIT BUS APPLICATIONS.

ISL



Every Time.

The ISL is the most popular engine in the transit market, due to its high reliability, low maintenance and fuel efficiency. The ISL EPA '07 incorporates familiar, proven technologies and subsystems: cooled EGR, Cummins patented VG Turbo, High Pressure Common Rail fuel injection, and Cummins Particulate Filter. These technologies have been used in Cummins transit bus engines for years. Our VG Turbo constantly adjusts airflow to reduce turbo lag and provides smooth acceleration. Because it has only one moving part in the hot exhaust stream, it is vastly more reliable and durable than competitive turbos. We've produced more engines with particulate filters than any other manufacturer, earning a reputation for low maintenance and trouble-free operation. Fleet managers can relax – the ISL will be ready to go at the start of every shift, every time.

Every Dollar.

The ISL is also easy on the operating and maintenance budget. Based on one of the most fuel efficient engines in the transit market, the ISL will help keep your fuel bill down. The ISL maintains its long service and maintenance intervals to make every dollar in your budget go farther.

Every Route.

A wide variety of ratings and configurations are available to match your unique operating requirements. Horsepower ratings from 250-330 provide the right performance for any transit bus – 29-foot through 60-foot articulated buses. The ISL is also available in conventional driveline and hybrid-ready configurations. Regardless of your needs, the Cummins ISL is the right engine for every bus, every route.

Ratings

ENGINE MODEL	ADVERTISED HORSEPOWER	PEAK TORQUE	GOVERNED SPEED
ISL 330	330	1100 @ 1300 RPM	2200 RPM
ISL 330H*	330	1100 @ 1300 RPM	2200 RPM
ISL 280	280	800 @ 1300 RPM	2200 RPM
ISL 280H*	280	800 @ 1300 RPM	2200 RPM
ISL 250	250	730 @ 1300 RPM	2200 RPM

*Hybrid Rating

Specifications

ADVERTISED HORSEPOWER	250-330 HP	187-246 KW
PEAK TORQUE	730-1100 LB-FT	990-1491 N-M
GOVERNED SPEED	2200 RPM	
CLUTCH ENGAGEMENT TORQUE	500 LB-FT	746 N-M
NUMBER OF CYLINDERS	6	
OIL SYSTEM CAPACITY	7.3 U.S. GALLONS	27.6 LITERS
NET SYSTEM WEIGHT	1,685 LB	764 KG
ENGINE WEIGHT	1,635 LB	742 KG
AFTERTREATMENT*	50 LB	22 KG

*Increase over standard muffler

[BAFO]

Optional Equipment.

- WABCO 18.7-cfm air compressor comes standard on Cummins engines with an optional 30.4-cfm model.
- Water-in-fuel sensor alerts driver to a sign of possible water in the fuel filter, contamination that could cause performance and durability problems.
- Cummins-branded electric starters and alternators that are covered under the engine warranty.
- Optional oil level monitoring from the driver's seat.

Electronic Features.

The electronic hardware and software on the ISL uses common architecture with all other Cummins engines. So it has all the latest diagnostics, maintenance monitoring and engine protection features with customer selectable shutdown. Its full-authority electronic controls also include:

- Engine Protection – Regulates rpm to reduce the risk of progressive damage when a severe fault code is logged.
- Idle Control – Environmentally friendly feature manages idling time and improves fuel economy.
- Door Interlock – Provides additional passenger security.
- Starter Lockout – Provides additional engine/starter protection.
- Electronic Monitoring of Cummins Particulate Filter – ECM constantly monitors filter pressure, initiating active regeneration as needed.

Enhanced Durability. Every Mile.

Cummins ISL is designed for severe-duty, inner-city transit operations. Targeted piston cooling, roller followers and articulated pistons increase durability. A combination full-flow and bypass oil filter extends piston ring and bearing life. TNS, together with mid-stop cylinder liners, makes the ISL easier to rebuild.

- High-efficiency tube cooler lowers oil temperatures for long life.
- Six Sigma design practices have resulted in enhanced reliability for individual components and the total engine design.
- A crankcase ventilation system with a coalescing filter virtually eliminates oil carryover.
- Coolant flow has been optimized and balanced, effectively reducing cylinder temperatures.

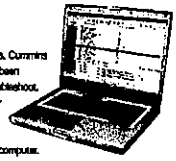
ISL Maintenance Intervals.

	MILES / KILOMETERS	HOURS	MONTHS
OIL AND FILTER	6,000 9,660	500	6
PRIMARY FUEL FILTER	6,000 9,660	500	6
SECONDARY FUEL FILTER	12,000 19,300	1,000	12
COOLANT FILTER	NONE*	NONE*	NONE*
OVERHEAD ADJUSTMENT	150,000 241,500	5,000	48
STD. COOLANT CHANGE	240,000 385,000	N/A	24
COALESCING FILTER	80,000 128,000	2,000	24
PARTICULATE FILTER	200,000-400,000 MI (320,000-640,000 KM)		

*If engine is equipped with a coolant filter, it will need to be replaced on the same intervals as the oil filter.

[BAFO]

Electronic Tools.



INSITE™ – For years, Cummins INSITE software has been making it easy to troubleshoot, repair and service our electronic engines through easy-to-follow steps on your computer. Multiyear subscriptions are now available out to 12 years.

Cummins Electronic Parts Catalog (CEPC) – CEPC turns your computer into a Cummins service parts topic center. Virtually every fact you'll want to know about your ISL will be here, including part numbers, diagrams, options and engine information. Simple to learn and easy to use for faster answers to questions and increased productivity.

QuickServe® Online – Gives rapid access to parts and service information for over nine million engine serial numbers. Part numbers and diagrams, maintenance information and service bulletins, warranty details and more are available every minute of every day via the Internet.

Transmission Matches.

Typical engine/transmission combinations that will deliver the optimal balance of performance and fuel economy:

TRANSMISSION MODEL	ISL 250	ISL 280	ISL 330
ALLISON B300	•		
ALLISON B400	•	•	
ALLISON B500			•
ZF HP500	•		
ZF HP590	•	•	
ZF HP600			•
VOITH D863.3	•	•	•
VOITH D864.3	•	•	•

Warranty Coverage.

Every Cummins urban transit engine comes with a standard 2-year/unlimited-mileage warranty with 3-year/300,000-mile (482,804 km) major components coverage, whichever occurs first. For additional details, ask to see Cummins Bulletin 3381278.

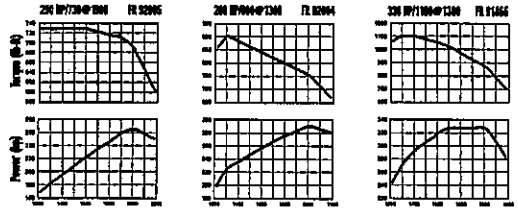
A variety of extended coverage plans are available for ISL engines in urban transit bus applications. Contact your local Cummins dealer or distributor for details.

Every Question. Answered.

- Service Network – Cummins engines are backed by nearly 3,500 authorized parts and service outlets in North America.
- Customer Assistance Center – Call the Cummins specialists for technical assistance and service locations at 1-800-DIESELS (1-800-343-7357).
- Cummins E-Mail – For online assistance with Cummins-related questions, click on the Contact Us link in the header at everytime.cummins.com.
- Cummins Web Site – For product literature or additional information, log on to everytime.cummins.com.
- Cummins Online Registration – Register all your Cummins engines quickly and easily at everytime.cummins.com to ensure quality parts and service for your engine.

[BAFO]

ISL URBAN TRANSIT BUS TORQUE AND POWER CURVES.



Cummins is a pioneer in product improvement. These specifications may change without notice. Illustrations may include optional equipment.

[BAFO]

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Cummins Extended Coverage Plan

Coverage

This Coverage is available for Cummins B, C, L, M, N and X Engines used in automotive applications marketed for use in the United States* and Canada under the trademark "Cummins", "Cummins ReCon" or "Cummins Westport."

This Extended Coverage Plan (Plan) covers any failure of the Engine, under normal use and service, which results from a defect in material or factory workmanship (Covered Failure).

This Plan begins on the expiration of the Cummins Base Engine Warranty applicable to the Engine. Coverage ends at the time, miles (kilometers) or hours specified on the accompanying Certificate, whichever occurs first, **AS MEASURED FROM THE CUMMINS BASE ENGINE WARRANTY START DATE.**

Cummins Responsibilities

Cummins will pay for all parts and labor needed to repair the damage to the Engine resulting from a Covered Failure.

Cummins will pay for the lubricating oil, antifreeze, filter elements and other maintenance items that are not reusable due to a Covered Failure.

Cummins will pay reasonable labor costs for Engine removal and reinstallation when necessary to repair a Covered Failure.

Owner Responsibilities

Owner is responsible for operation and maintenance of the Engine as specified in the applicable Cummins Operation and Maintenance Manual. Owner is also responsible for providing proof that all recommended maintenance has been performed.

Before the expiration of this Coverage, Owner must notify a Cummins distributor, authorized dealer or other repair location approved by Cummins of any Covered Failure and make the Engine available for repair by such facility. Owner is also responsible for delivering the Engine to the repair facility. Locations in the United States and Canada are listed in the Cummins United States and Canada Sales and Service Directory.

Owner is responsible for all towing and/or travel expenses incurred as a result of a Covered Failure.

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements, belts, hoses and

other maintenance items provided during covered repairs unless such items are not reusable due to the Covered Failure.

Owner is responsible for communication expenses, meals, lodging and similar costs incurred as a result of a Covered Failure.

Owner is responsible for non-Engine repairs, "downtime" expenses, cargo damage, fines, all applicable taxes, all business costs and other losses resulting from a Covered Failure.

Owner is responsible for the cost to investigate complaints, unless the failure is caused by a defect in Cummins material or factory workmanship.

Limitations

Cummins is not responsible for failures or damage resulting from what Cummins determines to be abuse or neglect, including, but not limited to: operation without adequate coolants or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the Engine. Cummins is also not responsible for failures caused by incorrect oil or fuel or by water, dirt or catalytic reagent or other contaminants in the fuel or oil or catalytic reagent.

Aftertreatment components are not covered by this Plan.

This Plan does not apply to accessories supplied by Cummins which bear the name of another company. Such non-warranted accessories include, but are not limited to: alternators, starters, fans, air conditioning compressors, clutches, filters, transmissions, torque converters, steering pumps, and non-Cummins fan drives, engine compression brakes and air compressors.

This Plan does not apply to maintenance components, including, but not limited to: fuel injectors, fuel pump, STC hydraulic tappets, STC oil control valve, fuel control valve, low pressure fuel regulator, throttle plate actuator, spark plugs, spark plug boots, turbocharger, air compressor, fan clutch, water pump, fan hub, fan idler pulley assembly, vibration damper, belts and hoses.

Failures resulting in excessive oil consumption are not covered by this Plan.

Parts used to repair a Covered Failure may be new Cummins parts, Cummins approved rebuilt parts or repaired parts. Cummins is not responsible for failures resulting from the use of parts not approved by Cummins.

A new Cummins or Cummins approved rebuilt part used to repair a Covered Failure under this Plan assumes the identity of the part it replaced and is entitled to the remaining Coverage hereunder.

This Plan is transferable to subsequent Owners of the Engine by notifying a Cummins Distributor within 90 days of the transfer of ownership.

This Plan does not duplicate other coverage applicable to the Engine.

Fees paid for this Plan are not refundable.

CUMMINS DOES NOT COVER WEAR OR WEAROUT OF COVERED PARTS.

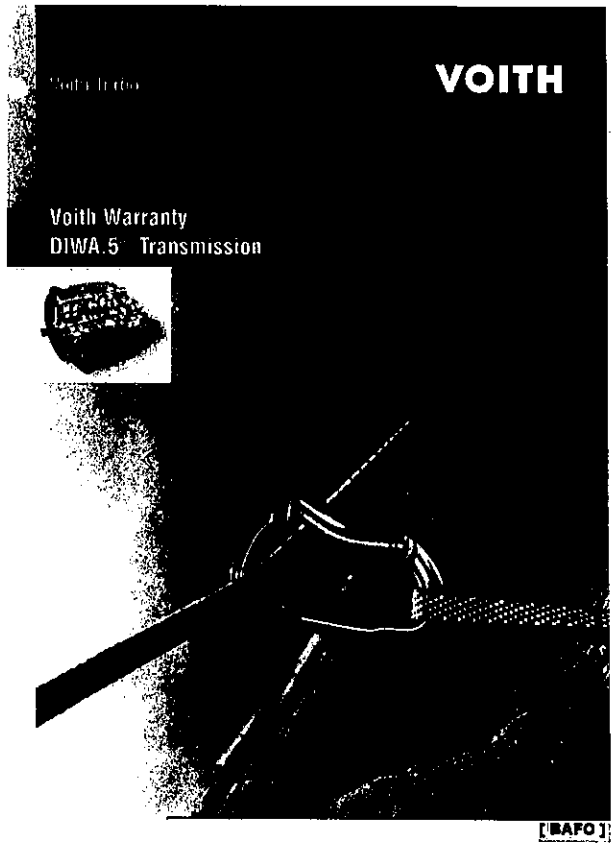
CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

EXCEPT FOR THE PUBLISHED CUMMINS ENGINE WARRANTY APPLICABLE TO THE ENGINE, THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

* Includes American Samoa, Commonwealth of Northern Mariana Islands, Guam, Puerto Rico, and U.S. Virgin Islands.

Coverage I.D.: NEC

Last Modified: 11-Sep-2007



Coverage

This warranty applies to all DIWA.5® Transmissions marketed by Voith and used in bus applications in the United States and Canada.

The Base Transmission Warranty covers any failures of the transmission that result, under normal use and service, from defects in workmanship or material. The warranty period shall be 24 months from vehicle acceptance but no longer than 30 months from delivery from VTI to the first purchaser. The warranty period shall at most consist of a total traveling distance of 150,000 miles. Validity of warranty coverage is dependent upon adherence to the conditions outlined in Voith's Servicing Schedule (G1942).

Voith offers a variety of extended warranty coverage. Extended warranty coverage is available for 36 months/200,000 miles; 48 months/200,000 miles; or 60 months/600,000 miles. During the extended warranty period, Voith covers any failure of the transmission that results, under normal use and service, from defects in workmanship and material. Not covered is repair and replacement of: 1) normal wearing parts, or 2) of

Extended coverage begins upon the expiration of the base transmission warranty and shall extend to the time and miles specified by the coverage selected. Coverage time is measured from the date of vehicle acceptance.

Consult with your Bus OEM or local Voith Representative for pricing and coverage that best serves your needs.

Validity of extended warranty coverage is dependent upon adherence to the conditions outlined in Voith's Servicing Schedule (G1942) and must be purchased at the time of order placement. All responsibilities and limitations for any of the parties are the same as for the base coverage.

Voith offers an Extended Care Program that extends warranty coverage to 60 months/300,000 miles. During this extended warranty period, Voith covers any failure of the transmission that results, under normal use and service, from defects in workmanship and material. Not covered is repair and replacement of: 1) normal wearing parts, or 2) of electronic parts including electronic cables, the ECU and pushbutton selectors, or towing. Reference Voith Extended Care (G1941) for specific details on coverage. Consult with your Bus OEM or local Voith Representative for pricing and details.

Validity of the Extended Care coverage is dependent upon adherence to the conditions outlined in Voith's Servicing Schedule (G1942) and must be purchased at the time of order placement. All responsibilities and limitations for any of the parties are the same as for the basecoverage.

Extended coverage begins upon the expiration of the base transmission warranty and shall extend to the time and miles specified by the coverage selected. Coverage time is measured from the date of vehicle acceptance.

Spare Transmission Warranty

Spare Transmissions are warranted for 24 months/100,000 miles. Coverage begins from date of installation but is not valid beyond thirty-six (36) months from date of acceptance. Transmission must be filled with approved fluid, and main shaft turned at least once a year to insure proper environment for seals, gaskets, piston and O-rings. This is required for each year of shelf life.

Voith Original Spare Parts Warranty

Voith original spare parts are warranted from failures that result under normal use and service for a period of six months from the date of first installation in a transmission. The provisions of this warranty do not apply for failure of parts which have been caused by improper use, improper maintenance or storage, accident, other casualty or negligence by any person other than Voith; by improper repair by any person other than Voith or repair with parts not approved or supplied by Voith; by improper installation by any person other than Voith; or by other circumstances beyond Voith's control. This coverage includes cost of the affected part and labor for replacement of the affected part. There is no coverage for consequential damage. This warranty is made to only the first purchaser in the chain of distribution.

Voith Responsibility

During the Base Transmission Warranty

Voith will pay for all parts and labor needed to repair the damage to the transmission resulting from a failure covered by Voith's warranty. All labor costs will be paid in accordance with published Voith Repair Order Guidlines.

Voith will pay for the lubrication oil, filter elements, hoses and other maintenance items that are damaged or not reusable due to the warrantable failure.

Voith will pay reasonable labor costs for transmission removal and reinstallation when necessary to make the warranty repair as outlined in the standard repair order times published by Voith. Voith will pay reasonable towing costs within the boundaries of the operational city to the nearest authorized repair location. Voith will pay the authorized Voith distributors' billable labor rates.

Owner Responsibility

Owner is responsible for the cost of non-transmission repairs and the cost of ATF's, filter elements, hoses and other maintenance items replaced during warranty repairs unless such items are not reusable due to warrantable failure.

Owner is responsible for the operation and maintenance of the transmission as specified in the Voith Servicing Schedule. Faults or failures arising from non-compliance are not covered under warranty.

Before the expiration of the applicable warranty, Owner must notify a Voith distributor, authorized dealer or other repair location approved by Voith of any warrantable failure and deliver the transmission to such facility for repair.

Owner is responsible for communication expenses, meals, lodging and incidental costs incurred by Owner or employees of Owner as a result of warrantable failure.

The provisions of Voith's base transmission warranty, extended warranty, spare transmission warranty and original spare parts warranty do not apply, and warranty coverage is not provided, with respect to failures which have been caused or contributed to by improper use, improper maintenance or storage by any person other than Voith; failure to comply with operating, maintenance or service instructions by any person other than Voith; use of inadequate, improper or incompatible coolants or lubricants by any person other than Voith; accident, other casualty or negligence by any person other than Voith; modification as to substantially alter the operating characteristics of the equipment or its components; improper repair or repair with parts not approved or supplied by Voith; improper installation; or other circumstances beyond Voith's control. The Owner is required to notify Voith of any failures which may be covered by this Warranty immediately after such failure is discovered or by reasonable care could have been discovered. Voith is not responsible for damages resulting from a delay in notifying Voith, or for damages which could have been prevented by a timely notification.

Voith's liability with respect to breaches of warranty shall be limited to repair or replacement as provided in Voith's warranty, and in no event shall Voith's liability, whether for breach of contract or warranty, or otherwise, exceed the purchase price of the warranteed product or component involved. Voith shall not be subject to any other obligations or liabilities, whether arising out of breach of contract, warranty, tort (including negligence), strict liability or other theories of law, with respect to transmissions or component parts sold by Voith or any understandings, acts or omissions relating thereto.

Without limiting the generality of the foregoing, Voith specifically disclaims any liability for property damages, penalties, special or punitive damages, damages for lost profits or revenues, loss of use of products or any associated equipment, cost of capital, facilities or services, down-time, shut-down or slow-down costs, spoilage of materials or for any other types of economic losses.

Voith shall not be liable for and specifically disclaims all consequential, contingent, incidental, punitive and exemplary damages whatsoever.

Voith's warranties and conditions as stated above are exclusive and in lieu of all other express and implied warranties and conditions whatsoever, including but not limited to the implied warranties and conditions of merchantability and fitness for a particular purpose.

The exclusive remedy of repair or replacement shall not be deemed to have failed its essential purpose.

VOITH

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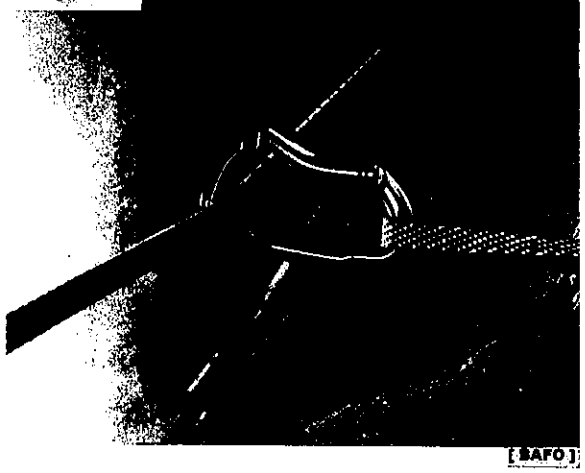
VOITH

Extended Care
DIWA.5 Transmission



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Coverage Offerings

Component Coverage:

- Cover Flange
- Center Flange
- Attachment Flange
- Intermediate Ring
- Input Cover
- Input Shaft
- Lamellar Carrier
- Piston
- Piston Carrier
- Support Plate
- Ring Gear
- Planet Carrier
- Pump Shaft
- Piston Ring Carrier
- Piston Carrier
- Piston
- Lamellar Carrier
- Pump Impeller
- Pipe Lines
- Gear Wheel
- Guide Wheel
- Solenoid Valve Housing
- Cover
- Piston
- Pipe Line
- Magnet
- Control Pin
- Internal Wiring Harness
- Cap
- Suction Strainer
- Pump Drive Gear
- Pipe
- Ring Gear
- Inside Wheel
- Crown Wheel
- Brake Piston
- Support Ring
- Planet Carrier Main Shaft
- Planet Carrier
- Turbine
- Guide Wheel
- Turbine Shaft

[BAFO]

Protection for your new Transmission

Component Coverage continued:

- Lamellar Carrier
- Planet Carrier
- Ring Gear
- Output Drive Cover
- Brake Piston
- Ring
- Crown Wheel
- Output Flange / Yoke

Parts not covered under the Extended Care Coverage includes:

- Friction Disks
- Gaskets
- Seals
- Piston Rings
- Side Disks
- Bushings
- Bearings
- Springs
- Electrical Cable
- Electronic Control Unit
- Push Button Selector
- Up to $ 250.00 on ATF fluids
- Towing
- Freight costs

Warranty limitation and maintenance requirements are outlined in Voith's catalog Voith Warranty (G1936) and Voith Servicing Schedule (G1942).

Conditions:
All extended warranty coverage's to be purchased have to be included in the original transmission purchase order.

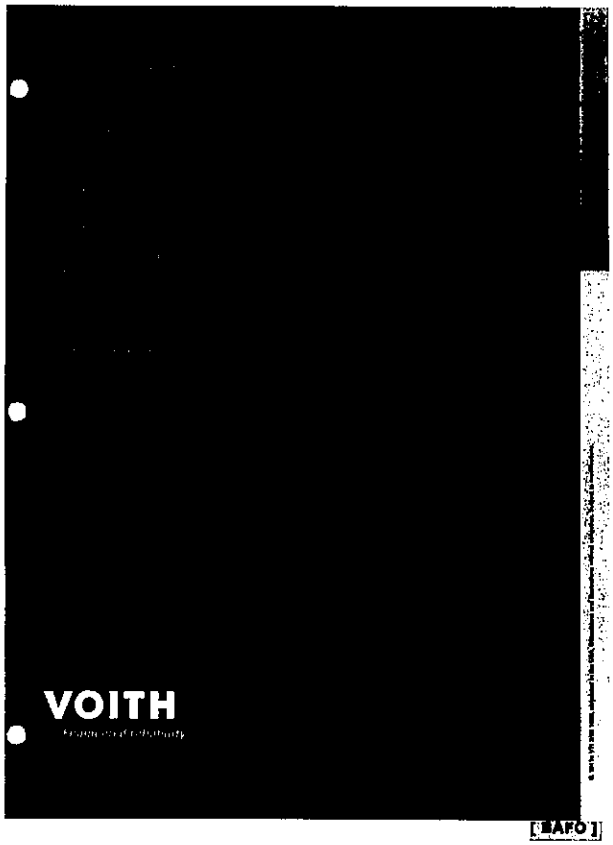
Voith Extended Care.
Extends the base Voith warranty on your DIWA transmission.

Contact your Voith Salesman for Details.

The Perfect City-Bus Transmission

At Voith, we understand transit. That is why we build a transmission specifically designed for a city bus. Unlike other automatics, our transmission uses a power splitting principle, which is designed to fit the operation profile of a transit bus.

[BAFO]



[BAFO]

VOITH

Voith Turbo

Voith Turbo Inc.
25 Winship Road
York, PA 17406, USA

Subject Cooperation between Voith and PETRO-CANADA

Memo

Originally issued: May 2007

Revised: December 2008

Cooperation between Voith and PETRO-CANADA

Voith Turbo Inc. and PETRO-CANADA* are pleased to announce cooperation in the area of automatic transmission fluid used in conjunction with Voith DIWA Automatic Transmissions. This announcement applies to Fleets operated within the United States and Canada.

Petro-Canada has an approved, synthetic blend automatic transmission fluid that is listed on Voith Turbo's Approved Fluid List for DIWA transmissions (DSB 132X (for .2/.3/.3e units) /DSB 118XX (for .5 units)) in North America. It is identified by GM approval number H36007 and Maxon approval number M5970801 Petro-Canada Heavy Duty Synthetic Blend ATF. It is approved for oil and filter change up to two years or 72 000 miles (118 000 kms), whichever comes first**.

When using this fluid in new deliveries of Voith DIWA models .3E and .5, the transmission's base warranty becomes 30 months/150 000 miles, whichever comes first, in place of our standard 2 years/150 000 miles, whichever comes first. Conditions for this warranty extension are:

[BAFO]

VOITH

Voith Turbo

Voith Turbo Inc.
25 Winship Road
York, PA 17406, USA

Memo

Page 2

DIWAGuard:

Customer's buying newly produced buses with a new DIWA transmission now have the option to extend the transmission's Base Warranty Coverage Period from 24 months or 150 000 miles to 30 months or 150 000 miles, whichever comes first, on the following conditions:

For DIWA .3E versions:

- Upon initial delivery of the transmission from the respective bus OEM, the operator installs Petro-Canada Heavy Duty Synthetic Blend ATF at the "first fluid change" and continues to operate the transmission during the Base Warranty Coverage Period using the specified Petro-Canada Heavy Duty Synthetic Blend ATF. The operator will be allowed to have different fluid provided by the OEM but the subject Petro-Canada fluid will need to be installed upon delivery as part of the prescribed "break-in" maintenance as detailed in Service Schedule G1734e.

For DIWA .5 versions:

- Upon initial delivery of the transmission from the respective bus OEM, the operator either:
  - Installs the approved Petro-Canada Heavy Duty Synthetic Blend ATF during bus build/delivery and continues to operate the transmission during the Base Warranty Coverage Period using the specified Petro-Canada Heavy Duty Synthetic Blend ATF. Operator must follow all procedures as outlined in Service Schedule G1742e.
  - The operator will be allowed to have different fluid provided by the OEM but the subject Petro-Canada fluid will need to be installed upon delivery. Operator must follow all procedures as outlined in Service Schedule G1742e.

[BAFO]

VOITH

Voith Turbo

Voith Turbo Inc.
25 Winship Road
York, PA 17406, USA

Memo

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Voith also offer those customers buying newly produced buses with new DIWA transmissions the option to purchase five year / 300 000 mile 100% P&L Warranty at a discount on the condition that, upon initial delivery of the transmission from the respective bus OEM, the operator installs the approved fluid at the "first fluid change" and then continues to operate the transmission during the Warranty Period using the specified Petro Canada Fluid.

For information on distribution and delivery of Petro-Canada products, you may contact Bruce Hyett, Petro-Canada National Account Manager at +1 518 782-0452.

- Subject fluid must be used exclusively for the entire term of the warranty period.
- "All provisions for proper care and maintenance of the transmission as described in DIWA Service Schedule (G1734e-.3E, G1942e-.5) must be observed. Of particular note is the provision for scheduled oil analysis.

Voith Turbo, the specialist for hydrodynamic drive, coupling and braking systems for road, rail and industrial applications, as well as for ship propulsion systems, is a Group Division of Voith AG.

Voith sets standards worldwide for papermaking technology, power transmission, energy technology, and industrial services. Voith was founded in 1867. With approximately 34 000 employees, annual sales of € 3.7 billion and over 250 locations worldwide, Voith is one of the largest family-owned companies in Europe. Voith is an official partner of the initiative "Germany – Land of Ideas."

[BAFO]

VOITH

Voith Turbo

Memo

Page 4

Contact Product Group:
Frederick Smith
Voith Turbo Inc.
210 Harris Avenue, Unit # 1
Sacramento, CA 95838, USA
Tel. +1 916 759-4180
Fax +1 916 925-4287
Fred.Smith@voith.com
www.usa.voithturbo.com

[BAFO]

Allison Transmission GM

Important

The following warranty statement is for transmissions purchased by Participating OEMs (Original Equipment Manufacturers) and by Allison Transmission Distributor / Dealers. The term Participating means that the OEM participates in the warranty coverage provided by Allison Transmission and utilizes Allison Transmission authorized Distributor / Dealer network for warranty repairs. In the event that an OEM is not a Participating OEM then the OEM provides the warranty to the customer by utilizing their own network for warranty repairs.

Please refer to your vehicle's operator / owner's manual and or selling vehicle dealer for powertrain coverage.

[BAFO]

NEW PRODUCT WARRANTY

(Effective 1-1-2004)

Allison Transmission GM

PARTICIPATING OEM SALES
DISTRIBUTOR SALES

LIMITED WARRANTY ON NEW ALLISON AUTOMATIC TRANSMISSIONS USED IN TRANSIT BUS APPLICATIONS

Allison Transmission will provide for repairs or replacement, at its option, during the warranty period of each new Allison transmission listed below that is installed in a Transit Bus in accordance with the following terms, conditions, and limitations.

WHAT IS COVERED

- **WARRANTY APPLIES** — This warranty is for new Allison transmission models listed below installed in a Transit Bus and is provided to the original and any subsequent owner(s) of the vehicle during the warranty period.
- **REPAIRS COVERED** — The warranty covers repairs or replacement, at Allison Transmission's option, to correct any transmission malfunction resulting from defects in material or workmanship occurring during the warranty period. Needed repairs or replacements will be performed using the method Allison Transmission determines most appropriate under the circumstances.
- **TOWING** — Towing is covered to the nearest Allison Transmission Distributor or authorized Dealer only when necessary to prevent further damage to your transmission.
- **PAYMENT TERMS** — Warranty repairs, including parts and labor, will be covered per the schedule shown in the chart contained in section "APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE."
- **OBTAINING REPAIRS** — To obtain warranty repairs, take the vehicle to any Allison Transmission Distributor or authorized Dealer within a reasonable amount of time and request the needed repairs. A reasonable amount of time must be allowed for the Distributor or Dealer to perform necessary repairs.
- **TRANSMISSION REMOVAL AND REINSTALLATION** — Labor costs for the removal and re-installation of the transmission, when necessary to make a warranty repair, are covered by this warranty.
- **WARRANTY PERIOD** — The warranty period for all coverages shall begin on the date the transmission is delivered to the first retail purchaser or, if the transmission is first placed in service as a demonstrator prior to sale at retail, on the date the transmission was first placed in such service The warranty period for all coverages shall end at the expiration of the coverage set forth below.

APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE

APPLICABLE MODELS	WARRANTY LIMITATIONS (Whichever occurs first)		ADJUSTMENT CHARGE TO BE PAID BY THE CUSTOMER	
	Months	Transmission Miles Or Kilometers	Parts	Labor
T255, T260, T265	0-12	No Limit	No Charge	No Charge
MT, HT, V	0-24	0-100,000 m 0-160,000 km	No Charge	No Charge
HD B 210, B 220, B 300, B 400, B 500 T270, T280, T310, T325, T350, T375, T425, T450 EP40 (System), EP50 (System)	0-24	No Limit	No Charge	No Charge
AT	0-36	0-150,000 m 0-240,000 km	No Charge	No Charge
EUROPE ONLY (requires use of TES295 approved fluids) T280, T310, T325, T350	0-48	No Limit	No Charge	No Charge

[BAFO]

WHAT IS NOT COVERED

- **DAMAGE DUE TO ACCIDENT, MISUSE, or ALTERATION** — Defects and damage caused as the result of any of the following are not covered:
  - — Flood, collision, fire, theft, freezing, vandalism, riot, explosion, or objects striking the vehicle;
  - — Misuse of the vehicle;
  - — Installation into unapproved applications and installations;
  - — Alterations or modification of the transmission or the vehicle; and
  - — Anything other than defects in Allison Transmission material or workmanship.

  NOTE: This warranty is void on transmissions used in vehicles currently or previously titled as salvaged, scrapped, junked, or totaled.
- **CHASSIS, BODY, and COMPONENTS** — The chassis and body company (assemblers) and other component and equipment manufacturers are solely responsible for warranties on the chassis, body, component(s), and equipment they provide. Any transmission repair caused by an alteration(s) made to the Allison transmission or the vehicle which allows the transmission to be installed or operated outside of the limits defined in the appropriate Allison Installation Guideline is solely the responsibility of the entity making the alteration(s).
- **DAMAGE CAUSED by LACK of MAINTENANCE or by the USE of TRANSMISSION FLUIDS NOT RECOMMENDED in the OPERATOR'S MANUAL** — Defects and damage caused by any of the following are not covered:
  - — Failure to follow the recommendations of the maintenance schedule intervals applicable to the transmission;
  - — Failure to use transmission fluids or maintain transmission fluid levels recommended in the Operator's Manual.
- **MAINTENANCE** — Normal maintenance (such as replacement of filters, screens, and transmission fluid) is not covered and is the owner's responsibility.
- **REPAIRS by UNAUTHORIZED DEALERS** — Defects and damage caused by a service outlet that is not an authorized Allison Transmission Distributor or Dealer are not covered.
- **USE of OTHER THAN GENUINE ALLISON TRANSMISSION PARTS** — Defects and damage caused by the use of parts that are not genuine Allison Transmission parts are not covered.
- **EXTRA EXPENSES** — Economic loss and extra expenses are not covered. Examples include but are not limited to: loss of vehicle use; inconvenience; storage; payment for loss of time or pay; vehicle rental expense; lodging; meals; or other travel costs.

OTHER TERMS APPLICABLE TO CONSUMERS AS DEFINED by the MAGNUSON-MOSS WARRANTY ACT

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Allison Transmission does not authorize any person to create for it any other obligation or liability in connection with these transmissions. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO THESE TRANSMISSIONS IS LIMITED IN DURATION TO THE DURATION OF THIS WRITTEN WARRANTY. PERFORMANCE OF REPAIRS AND NEEDED ADJUSTMENTS IS THE EXCLUSIVE REMEDY UNDER THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (SUCH AS, BUT NOT LIMITED TO, LOST WAGES OR VEHICLE RENTAL EXPENSES) RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.**

** Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

OTHER TERMS APPLICABLE TO OTHER END-USERS

THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE ALLISON TRANSMISSION MODELS LISTED ABOVE AND IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ALLISON TRANSMISSION DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH TRANSMISSIONS. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WARRANTY OR ANY IMPLIED WARRANTY.

QUESTIONS

If you have any questions regarding this warranty or the performance of warranty obligations, you may contact any Allison Transmission Distributor or Dealer or write to:

Allison Transmission
General Motors Corporation
P.O. Box 894
Indianapolis, IN 46206-0894
Attention: Warranty Administration PF9

Form SB0611EN (2003/12)

[BAFO]

Bus Air Conditioning
Standard
Warranty Claim Instructions
Warranty Policy
Labor Standards

[BAFO]

TK 10018-1

Contents

[BAFO]

Manufacturer's
Bus Air Conditioning Equipment
Basic 2 Year Warranty

The Following Statement of Warranty appears on the reverse side of the customers copy of the warranty registration report:

A. Subject to the conditions hereinafter stated, the Manufacturer (Thermo King Corporation) warrants its equipment to be free from defects in material and workmanship for a period of two years from the date in service or 30 months from date of ex-factory shipment. This warranty extends only to the original owner of the equipment and is limited to repair or replacement (at Manufacturer's option) at any of its authorized service agencies of any part or parts which are returned to the Manufacturer by the service agency, and which, on Manufacturer's examination, will conclusively appear to have been defective.

This warranty shall not apply to any equipment which either (1) had been shipped from the plant more than 30 months before becoming defective or (2) had been so repaired or altered outside the Manufacturer's plant as, in the Manufacturer's judgment, to affect its stability or (3) had been subjected to misuse, negligent handling or accident or (4) had been installed or operated contrary to the Manufacturer's printed instructions.

The manufacturer reserves the right to make changes or improvements in design or product without thereby obligating itself to install the same upon its products previously manufactured.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHER WARRANTY OR QUALITY, WHETHER EXPRESSED OR IMPLIED, AND OF ALL OTHER LIABILITIES AND OBLIGATIONS ON THE MANUFACTURER'S PART. The Manufacturer neither assumes, nor authorizes any other person to assume for it, any obligations or liabilities except as herein expressed.

The Manufacturer is not responsible, and will not be held liable in contract or in tort (including negligence) for special, indirect, or consequential damaged, including injury or damage caused to vehicles, contents, product cargo, or persons, by reason of the installation of any Thermo King product or its mechanical failure.

The decision of the Manufacturer shall be final and conclusive on any question in connection with the application or scope of this warranty.

B. When the date in service exceeds 90 days from the date of installation, a second pre-delivery inspection service must be performed by an authorized Thermo King dealer at the expense of the company selling the unit.

[BAFO]

Services Provided for Thermo King Owners

The Following statement appears on the reverse side of customers copy of the Warranty registration report:

A. **Parts and Labor**

Any parts of a unit which are repaired or furnished as replacements under terms of the Manufacturer's Warranty (except parts which have previously been repaired or furnished as replacements) will be installed by any authorized Thermo King service agency without charge to owner for materials or labor. Such Warranty Services will be performed only by an authorized Thermo King service agency during regular working hours, and will not include overtime, telephone calls or telegrams. WHERE REPAIRS UNDER WARRANTY ARE EFFECTED OUTSIDE THE BOUNDARIES OF THE U.S.A., THE OWNER WILL BE CHARGED CUSTOM DUTIES AND ANY TAXES APPLICABLE TO PARTS AND LABOR ACCORDING TO THE REGULATIONS OF THE COUNTRY WHERE SUCH WARRANTY IS PERFORMED.

B. **Service Identification**

This certificate when presented to any authorized Thermo King Service Agency, entitles the original owner to receive the above Warranty Services. If the registration plate is blank and the owner cannot establish the date in service, the service agency is not authorized to render said Warranty Services without charge. If a charge is made, the owner must present the paid invoice to the dealer from whom the unit was purchased for validating with the Manufacturer. The owner should make every effort to receive Warranty Services from the dealer who sold the unit.

[BAFO]

Manufacturer's Limited Warranty for New Service Parts

Subject to the conditions hereinafter stated, the Manufacturer (Thermo King Corporation) warrants its new Service Parts to be free from defects in material and workmanship for a period of 90 days from date in service. Certain Service Parts covered by extended or Prorated warranties will not be specified separately herein or in a Dealer warranty bulletin.

This warranty extends only to the original owner and is limited to repair or replacement (at Manufacturer's option) at any of its authorized service agencies of any part or parts which are returned to the Manufacturer by the service agency, and which, on Manufacturer's examination, will conclusively appear to have been defective.

This warranty shall not apply to any equipment which either)1) had been shipped from the plant more than one year before becoming defective or (2) had been so repaired or altered outside the Manufacturer's plant as, in the Manufacturer's judgment, to affect its stability or (3) had been subjected to misuse, negligent handling or accident or (4) had been installed or operated contrary to the Manufacturer's printed instructions.

The manufacturer reserves the right to make changes or improvements in design or product without thereby obligating itself to install the same upon its products previously manufactured.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHER WARRANTY OR QUALITY, WHETHER EXPRESSED OR IMPLIED, AND OF ALL OTHER LIABILITIES AND OBLIGATIONS ON THE MANUFACTURER'S PART. The Manufacturer neither assumes,. nor authorizes any other person to assume for it, any obligations or liabilities except as herein expressed.

The Manufacturer is not responsible, and will not be held liable in contract or in tort (including negligence) for special, indirect, or consequential damages, including injury or damage caused by vehicles, contents, product cargo, or persons, by reason of the installation of any Thermo King product or its mechanical failure.

The decision of the Manufacturer shall be final and conclusive on any question in connection with the application or scope of this warranty.

[BAFO]

Warranty Services

Under the terms of the Manufacturer's Limited Warranty, defective Service Parts will be replaced or repaired (at the Manufacturer's option) by any authorized Thermo King service agency without charge to the owner except for removal and installation labor, prorate adjustment and incidental expenses. Warranty services will be performed only at the premises of an authorized Thermo King service agency during regular working hours, and will not include overtime, telephone calls or telegrams.

WHERE REPAIRS UNDER WARRANTY ARE EFFECTED OUTSIDE THE BOUNDARIES OF THE U.S.A., THE OWNER WILL BE CHARGED CUSTOM DUTIES AND ANY TAXES APPLICABLE TO PARTS AND LABOR ACCORDING TO THE REGULATIONS OF THE COUNTRY WHERE SUCH WARRANTY IS PERFORMED.

Service Identification

This certificate when presented to any authorized Thermo King Service Agency, entitles the original owner to receive the above Warranty Services. If the owner cannot establish the date in service, the service agency is not authorized to render said Warranty Services without charge. If a charge is made the owner must present the paid invoice and the defective part to the dealer from whom it was originally purchased for validating with the Manufacturer. The owner should make every effort to receive Warranty Services from the dealer who sold the part.

Clarification on New Service Parts

Coverage

1. Includes PARTS ONLY on items which are not repairable in the field.
2. Includes PARTS & BENCH LABOR on field repairable assemblies.
3. Coverage EXCLUDES LABOR to R & R assembly from unit, motor oil, refrigerant or other miscellaneous material or labor.
4. The unexpired portion of the original new unit warranty shall supersede the replacement parts warranty in any case where applicable.

Exclusions

The replacement parts warranty is intended to cover DEFECTIVE material only. Consult directly with the SERVICE PARTS DEPARTMENT for specific instructions for handling material that falls into any of the following categories.

1. New Non-defective Parts
2. Mis-packaged Parts
3. Mis-numbered Parts
4. Obsolete Stock
5. Short Shipments
6. Shipping Damage

[BAFO]

Special Warranty Policy

Maintenance and Consumable Items

Thermo King warranty does not extend coverage to maintenance or consumable items which require periodic replacement as a result of normal wear such as those listed below:

1. Engine Oil
2. Lubricants
3. Filters
4. Cleaning Materials
5. Injector Nozzles
6. Spark Plugs - Glow Plugs
7. Ignition Points, Condensers
8. Drive Belts
9. Water Hoses
10. Starter/Generator Brushes

These items ARE COVERED however, against DEFECTS in material and workmanship by the manufacturer for a 90 day period. In addition, certain items may be covered if replacement was required as a result of warrantable failure elsewhere in the unit. An example would be replacement of oil and filters if they had been contaminated by an engine failure under warranty.

Field Repairable Assemblies

Thermo King dealers are required to perform adjustments or repairs as necessary on complete assemblies. Complete assemblies with minor problems that are easily corrected in the field include: Compressors with shaft seal leaks, alternators with blown isolation diodes, radiators with a small pin hole in the tank, and so forth. Other common field repairable assemblies include items such as engines, water pumps, injectors, starters, control panels, clutches, etc.

While repairing complete assemblies is always encouraged, in certain cases a point can be reached where it is simply not economical to do so. When material and bench labor begin to exceed 80 % to the cost of the assembly, it may be in everyone's best interests to consider a brand new replacement. Dealers are therefore requested to exercise good judgment when appraising the cost of rebuilding major components under warranty. In those cases where justified, it is recommended t consult the warranty department for specific authorization.

Sublet Repairs

Sublet repairs for special services not normally performed in the shop will be considered under warranty.

Such services include: radiator repair, injection pump service, heli-arc welding, etc.

Warranty policy does not include provisions for a dealer mark-up on sub-contracted repairs. Invoices for sublet repairs must be attached to the AWA and will be approved at dealer actual cost.

Special consideration for unusual or out of warranty situations should be cleared with the Warranty Department before proceeding with the repairs. An SWC form(Special Warranty Consideration) confirming the mutual agreement will be mailed to the dealer to attach directly to the claim form.

[BAFO]

Customer Reimbursements

Whenever a customer has been billed for repairs which were later covered under warranty, the reimbursement must be make at the prices which were ORIGINALLY CHARGED. . . not the amount of credit the dealer received from the warranty department. For example, if the parts on the original invoice were billed out at LIST PRICE, the customer is entitled to receive a credit at LIST PRICE, not dealer net. In such a case, the difference between List Price and Dealer Net must be adjusted internally by the dealer and not passed on to the customer. The same procedure must be observed for labor and incidental material.

Special Warranty Agreement

The policy outlined in this publication applies generally to the standard line of Bus Air Conditioning units. Certain OEM bus applications may have special warranty agreements which extend or limit the coverage differently than herein stated. Dealers are therefore advised to consult the factory for specific clarification of warranty on any unusual or special application before proceeding with repairs.

Diesel Injection Pumps

Bosch and Diesel Kiki Injection pumps are to be repaired under warranty by their own network of service stations. The correct procedure is to remove the component, deliver to the nearest authorized injection pump dealer, confirm date placed in service, and ask for warranty consideration. If warranty is granted, apply to Thermo King Corporation for labor to R & R component and attach the injection pump dealer's No Charge or Warranty Invoice to AWA claim. If warranty is denied by the injection pump dealer because of abuse or neglect, Thermo King Corporation will also disapprove any claim resulting from this same repair.

Diesel Engine Oil Consumption

This procedure is to provide Thermo King dealers with a uniform test to determine the rate of oil consumption in diesel engines. This test is required by the engine manufacturers and Thermo King if the engine is to be repaired under warranty. This test may also be used for gasoline engines. Consult the Service Department for specific oil consumption valves on gasoline powered units and small 1-cylinder diesels.

Engines which are to be tested for warranty consideration must not have been in service more than 12 months or have less than 500 hours running time.

1. Fill the crankcase to the FULL mark.
2. Run the unit in high speed for 24 hours. Stop the unit.
3. Again, carefully measure the amount required to fill to full.
4. This added oil represents the oil consumed in the 24-hour period.
5. A consumption of one quart or more in the 24 hour period indicates action should be taken to determine and correct the cause.
6. The cost of performing this test, 1.0 hours labor plus 20 gallons of fuel oil, will be credited with the engine repair provided the engine is within the warranty period and approval for the repair has been granted by the Warranty Department. The cost of the test will not be credited if the rate of oil consumption does not indicate repairs are required.

   IMPORTANT! See "Oil Consumption" under "Unwarrantable Repairs".

[BAFO]

Unwarrantable Items

The warranty coverage expressed in this publication is applicable exclusively to defective components manufactured or supplied by Thermo King Corporation. Under no circumstances will Thermo King extend warranty coverage to any failure, repair, damage or alteration such as te examples noted below.

Shop Supplies Surcharge

The practice of charging a certain percentage of the bill for "shop supplies" is being used today by some dealers. The percentages seem to have quite a wide range from 1-10% of material, labor or both. This surcharge is intended to cover the cost of cotter pins, gasket cement, terminal ends, nuts & bolts, and other miscellaneous material sometimes difficult for the mechanic to identify on the work order.

Most dealers however, tend to consider material of this nature the same as any other overhead expense and include the cost in their hourly labor rate. Thermo King agrees with this policy and therefore makes no special provision to accommodate this surcharge in the warranty.

Missing Components

Occasionally, engines and other major items are received into the Warranty Department without external accessories such as the starter, injection pump, etc. Missing components from complete assemblies claimed under warranty will be deducted from the dealer claim at current dealer net prices.

Clogged Transfer Pumps

Hand pumps and transfer pumps that are clogged with foreign material from the fuel tank are not warrantable. When the impurities are removed, these pumps function properly and are not defective. Dealers are advised to inspect and clean filter screens and internal parts before condemning the pump as defective. Claims of this nature will not be considered as warrantable.

Freight Carrier Damage

Visual Damage

A. If damage is severe, refuse shipment and do not sign freight bill.

Order or release duplicate shipment necessary to satisfy dealer requirements.

Recommend crating or packaging improvements which would prevent future shipping damage of a similar nature.

B. At option of dealer:

If damage is superficial and dealer wishes to perform repairs, shipment may be accepted.

Damage should be clearly defined on freight bill and signed by drive as freight carrier responsibility.

Rework expenses are to be negotiated and charged directly to freight carrier.

[BAFO]

Concealed Damage

A. Every effort should be made to thoroughly inspect shipment prior to signing freight bill.

Note on freight bill and have driver sign for tears or signs of impact in cardboard or packaging, which may support a concealed damage claim discovered at a later date.

B. Report concealed damage to freight carrier immediately or in any event, no later than 15 days after receipt of shipment.

Clearly establish responsibility, if possible.

Appraise extent of rework or replacement required to render equipment acceptable.

Recommend improvements in packaging which would prevent future concealed damage of a similar nature.

Electric Fuel Pumps

Electric fuel pumps will appear to malfunction if available voltage drops under 8 volts. A low voltage condition could be from a low battery during or after an extended period of cranking or a poor ground. In either case, it can easily mislead a mechanic into believing the pump is defective.

Fuel pumps should therefore be double checked with a good 12 volt battery before claiming them as defective. Pumps received by the factory without defects will not be considered as warrantable.

Summary of Expenses Not Extended Warranty Coverage

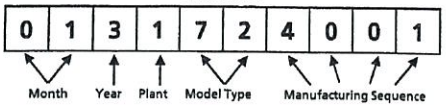
1. Labor or equipment charges for removal of complete assemblies or units that are field repairable or not defective.
2. Normal wear and tear items such as belts.
3. Rebuilt exchange items (starter, alternator, etc.).
4. Pickup and delivery charges.
5. Thermostat calibration.
6. Temporary repairs.
7. "Comebacks".
8. Services performed at unauthorized repair agents.
9. Towing, down time, rental automobiles, lodging, telephone, telegraphs or other intangibles.
10. Overtime or premium labor or material charges.
11. Improper installation, careless or negligent workmanship on the part of the installer or dealer.
12. "Shop Supplies" surcharge on invoices.
13. Consequential damage or load loss.
14. Vehicle or equipment modifications of any kind.
15. Unit or engine adapter kit modifications.
16. Freight carrier damage.
17. Components of the air conditioning system or installation not supplied by Thermo King Corporation.

[BAFO]

Unit Serial Number Identification

A sample serial number is shown with an explanation of each digit.

Serial number



Above sample = D-1 Cond/Evap built in Minneapolis, MN January 1983

Plant Code

1. Minneapolis, Minnesota
2. Louisvile, Georgia
3. Liege, Belgium
4. Minneapolis, Minnesota
5. Galway, Ireland
6. Ciales, Puerto Rico
7. Champinas, S. P. Brazil
8. Arecibo, Puerto Rico
9. Factory School

[BAFO]

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 6 Proposer: New Flyer of America

RFP #: 4000 Page: 129 Section: 4.7

Complete Description of Deviation:

Port Authority Specification Requirement:

(Fleet Defects)
A fleet defect is defined as the failure of identical items covered by the warranty and occurring in the warranty period in a proportion of each type of coach delivered under this contract. For deliveries of over 50 coaches, the proportion shall be 20 percent, rounded off to the nearest coach. For deliveries of 10 to 49 coaches, the proportion shall be 25 percent, rounded off to the nearest coach.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on that fleet defect is defined as cumulative failures in the same components in the same or similar application where such items covered by the warranty and such failures occur within the 1 year or 50,000 miles, (whichever occurs first). Fleet defect warranty does not apply to major components, contract specified components, and normal wear and tear items.

Rationale (Pros & Cons):

Clarified during 6/7/2010 teleconference:
Deviation language revised to be:
". . . failures occur within the 1 year or 75,000 miles, (whichever occurs first). . ."

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 7 Proposer: New Flyer of America

RFP #: 4000 Page: 129 Section: 4.8.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Repairs by Contractor)
If Port Authority requires the Contractor to perform warranty-covered repairs, the Contractor's representative must complete the repairs within three days, or a mutually agreed upon period, from the time the coach is made available for repair by the Authority. For any coach which is in the custody and control of the Contractor for repairs, beyond three (3) business days, or a mutually agreed upon period, the Contractor shall reimburse Port Authority at the rate of $500.00 per day for "loss of use". (This shall include all requests for testing and/or instances above or Port Authority of Allegheny County 130 beyond the control of the Contractor or its supplies.) Port Authority shall make the coach available to complete repairs timely with the Contractor's repair schedule.

New Flyer's Deviation/Clarification:

New Flyer will work with the property on warranty covered repairs, but the majority of the warranty repairs should be performed by the Procuring Agency's personnel with reimbursement by the Contractor.

If the Procuring Agency requires the Contractor to perform warranty covered repairs, the Contractor's representative must begin, subject to material availability, within ten (10) working days after receiving notification of a defect from the Procuring Agency, work necessary to effect repairs. New Flyer will work diligently to complete the repairs, however, we cannot agree to pay any late fees on the repair process, especially if the failure is related to a sub-component that requires 3rd party failure analysis, etc.

Rationale (Pros & Cons):

Clarified during 7/6/2010 teleconference:
Deviation / Clarification revised to retain reimbursement to Port Authority at the rate of $500.00 per day for "loss of use".

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 8 Proposer: New Flyer of America

RFP #: 4000 Page: 130 Section: 4.8.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Contractor Supplied Parts)
Port Authority may request that the Contractor supply new parts for warranty-covered repairs being performed by Port Authority. These parts shall be delivered prepaid to Port Authority from any source selected by the Contractor within three (3) business days, or a mutually agreed upon period, of receipt of the request for said parts. Port Authority shall be reimbursed at a rate of $300.00 per day for each day beyond the three (3) business days, or mutually agreed upon period, that the part(s) are not delivered to Port Authority for "loss of use".

New Flyer's Deviation/Clarification:

New Flyer will have commonly stocked parts to the Authority within 3 business days, however, we cannot guarantee deliveries on non-stocked parts within the 3 business days as we are subject to supplier's response as we have no control over this, therefore we cannot agree to pay liquidated damages on the parts delivery process.

Rationale (Pros & Cons):

Clarified during 7/6/2010 teleconference:
Deviation / Clarification revised to retain reimbursement to Port Authority at the rate of $300.00 per day for "loss of use".

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 9 Proposer: New Flyer of America

RFP #: 4000 Page: 131 Section: 4.8.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Failure Analysis)
The Contractor shall, upon specific request of Port Authority, 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 60 (sixty) days of the receipt of failed parts.

New Flyer's Deviation/Clarification:

New Flyer requires failed parts as they need to be shipped to the original equipment manufacturer for a failure analysis. To allow ourselves enough time to complete this process we request that such reports shall be delivered within ninety (90) days of the receipt of failed parts.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 10 Proposer: New Flyer of America

RFP #: 4000 Page: 131 Section: 4.8.3.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Reimbursement for Labor)
Port Authority shall be reimbursed by the Contractor for labor. The amount shall be determined by multiplying the number of man-hours actually required to correct the defect by the current per hour, 5M Mechanic, straight wage rate, plus applicable fringe benefits and overhead costs, plus the cost of towing the coach if such action was necessary and if the coach was in the normal service area. Labor required to correct "Fleet Defects" shall be reimbursed per the above method but with the wage rate multiplied by 1.5.

New Flyer's Deviation/Clarification:

New Flyer agrees to these terms and our proposal is based on labor hours being determined using New Flyer's Standard Repair Time Manual. If the labor hours for a particular operation are not listed in the Manual, the labor hours will be negotiated with the Regional Product Support Manager (RPSM). We also propose that the labor rate be agreed to, in writing, at the beginning of coach acceptance, and is to be fixed for a period of one year. New Flyer will agree to cover reasonable towing costs for one (1) year or 50,000 miles, (whichever occurs first). However, it should be noted that some limitations and exclusions may apply (e.g. New Flyer does not cover towing as a result of a Major Component failure).

Rationale (Pros & Cons):

NEW FLYER

STANDARD REPAIR TIMES MANUAL

Rev. 10 02/01/06

NEW FLYER

Rev. 10 02/01/06

1. INTRODUCTION

General Information

The Standard Repair Times Manual consists of standard times for those tasks which are commonly associated with repair work and warranty claims. These tasks have been identified by New Flyer based on both our overall Customer Service experience of these components as well as an estimation on the new components.

Those tasks which are associated with major components, such as an engine, transmission and HVAC system aside from removal and replacement will not be listed here. The original manufacturer of each major component such as Engine, Transmission and HVAC, will have their own Labor Time Guide or Standard Repair Times Manual. This is essential as each OEM manufacturer may identify and revise their tasks and times differently and independently of New Flyer documentation.

When claiming warranty times for uncommon tasks, the transit property should justify the claim by listing the times and labor required to complete the task. The New Flyer Regional Support Manager will then assist the transit property in determining a fair assessment of the warranty costs to be applied to the claim. New Flyer will then recover the cost of the claim through that manufacturer.

The determined time to complete these tasks are developed by New Flyer personnel under conditions comparable to the customer's shop. Development of times are generally based on the following assumptions:

- Tools: Use of normally available tools already in the possession of the technician, service equipment, and all essential Special Service Tools as indicated in this Manual.
- Technicians: The manual assumes use of competent technicians, not specialists in any particular operating system, who have attended company training programs and are accustomed to following Service Manual procedures.

IMPORTANT! EACH TASK INCLUDES TIME TO PERFORM ALL TASKS AS OUTLINED IN THIS MANUAL BUT DETAILED IN THE NEW FLYER SERVICE MANUAL. THIS IS DONE TO AVOID CONTRADICTION IN PROCEDURES AS WELL AS SUPPLY COMPLETE INSTRUCTIONS AND SAFETY INFORMATION REQUIRED. ALWAYS REFER TO THE NEW FLYER SERVICE MANUAL BEFORE PERFORMING ANY TASK.

Each time includes (where required); normal diagnosis, set-up, clean-up, removal and replacement. The actual time to perform the each is obtained by timing a technician in the actual performance. The cleaning time in each operating is limited to that directly associated with the installation or replacement of components, such as mating surfaces and/or internal parts involved in the repair.

- Normal Diagnosis: This is the time required to determine the causes of a routine service problem. Normal diagnosis includes defining those symptoms which are readily apparent to the senses. Normal diagnosis also includes the use of common testers by technicians, such as ammeters, compression testers, and integrated computer analysis.

SENIOR	TYPE	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
MENTOR	4.0 x 2	1	FRONT AXLE & SUSPENSION (AXLE BUILD)	
	0.2		LEVELING LINK	R&R
	0.3		LOWER BELLOW BOLTS	R&R
	0.4		LATERAL ROD BOLTS (AT STRUCTURE)	R&R
	0.7		RADIUS ROD BOLTS (AT STRUCTURE)	R&R
	0.3		BRAKE LINES	R&R
	0.4		STEERING DRAG LINK AT PITMAN ARM	R&R
	0.2		LOWER SHOCK ABSORBER NUTS	R&R
	0.1		A.B.S SENSORS	R&R
	0.4		TORQUE BOLTS	TORQUE
	0.5		FRONT END ALIGNMENT (MINOR)	ADJUSTMENT
	0.5		ROAD TEST	TEST
MENTOR	6.6	1	WHEEL END ASSEMBLY, FRONT AXLE (ONE SIDE)	
	0.6		TIRE & RIM ASSEMBLY; FRONT	R&R
	0.2		BRAKE DRUM, FRONT	R&R
	0.1		CAP, HUB	R&R
	0.2		WHEEL BEARING NUTS, WASHERS & OUTER CONE BEARING	R&R
	0.1		WHEEL HUB, FRONT	R&R
	0.2		BEARING AND SEAL, INNER FRONT	R&R
	0.1		A.B.S. SENSOR	R&R
	0.1		DE-PRESSURIZE BRAKE SYSTEM	EXHAUST AIR
	0.1		BRAKE RETURN SPRINGS, FRONT	R&R
	0.1		BRAKE SHOE ANCHOR PINS, FRONT	R&R
	0.1		BRAKE SHOE ASSEMBLY, FRONT	R&R
	0.4		BRAKE SHOE LINING (RIVETED, ONE SIDE)	R&R
	0.3		SLACK ADJUSTER ASSEMBLY, FRONT	R&R
	0.2		S CAMSHAFT	R&R
	0.1		S CAMSHAFT BUSHING	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.2		HUB ASSEMBLY	R&R
	0.2		BRAKE LINES FRONT	R&R
	0.2		BRAKE SPIDER ASSEMBLY, FRONT	R&R
	0.3		CASTLE NUT & TIE ROD END	R&R
	0.2		DRAG LINK	R&R
	0.2		STEERING KNUCKLE CAPS	R&R
	0.2		TIE ROD ARM	R&R
	0.2		DRAW KEY	R&R
	0.3		KING PIN	R&R
	0.3		SPINDLE, RACE & BEARINGS	R&R
	0.5		KING PIN BUSHINGS	R&R
	0.1		LUBRICATION GUIDE	LUBRICATE
	0.3		ALIGNMENT, FRONT END ONLY	ADJUSTMENT
MERITOR	0.7	1	BRAKE CHAMBER ASSEMBLY, FRONT AXLE (ONE SIDE)	
	0.5		BRAKE CHAMBER, FRONT	R&R
	0.2		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	ADJUSTMENT
MERITOR	0.9	1	BRAKE DRUM, FRONT AXLE (ONE SIDE)	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.3		BRAKE DRUM, FRONT	R&R
ALL		1	STAND ALONE ITEMS	
	0.4		DRAG LINK	R&R
	1.4		WHEEL BEARINGS (INNER & OUTER)	R&R
MAN (LF)	2.3 x 2 mech.	1	FRONT AXLE & SUSPENSION (AXLE BUILD)	
	0.2		LEVELING LINK BRACKETS	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.4		WHEEL STUD (QTY. OF 10)	R&R
	0.3		BRACKET ASSEMBLY, FRONT BRAKE CHAMBER	R&R
	0.5		BRAKE CHAMBER, FRONT	R&R
	0.2		BRAKE SPIDER ASSEMBLY, FRONT	R&R
	0.5		KING PIN	R&R
	0.5		KING PIN BUSHINGS	R&R
	0.2		KNUCKLE ASSEMBLY	R&R
	0.3		DRAG LINK	R&R
	0.2		TIE ROD ARM	R&R
	0.2		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	ADJUSTMENT
	0.5		ALIGNMENT, FRONT END (MINOR)	ADJUSTMENT
	0.1		LUBRICATION GUIDE	LUBRICATE
MERITOR	1.4	1	WHEEL HUB ASSEMBLY, FRONT AXLE (ONE SIDE)	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.2		BRAKE DRUM, FRONT	R&R
	0.1		CAP, HUB	R&R
	0.2		WHEEL BEARING NUTS, WASHERS & OUTER CONE BEARING	R&R
	0.1		WHEEL HUB, FRONT	R&R
	0.2		BEARING AND SEAL, INNER FRONT	R&R
MERITOR	1.2	1	WHEEL STUDS, FRONT AXLE (ONE SIDE)	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.2		BRAKE DRUM, FRONT	R&R
	0.4		WHEEL STUD (QTY. OF 10)	R&R
MERITOR	1.7	1	BRAKE SHOES, FRONT AXLE (ONE SIDE)	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.2		BRAKE DRUM, FRONT	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.3		BRAKE CHAMBER AIR LINES	R&R
	0.2		DRAG LINK	R&R
	0.1		SHOCK RETAINING NUTS (LOWER NUTS ONLY)	R&R
	0.4		LATERAL ROD	R&R
	0.2		CENTER LINK (OPTIONAL)	R&R
	0.5		RADIUS RODS (AT STRUCTURE)	R&R
	0.1		A B S SENSOR ELECTRICAL CONNECTION	DISCONNECT
	0.3		TORQUE BOLTS	TORQUE
	1.0 -Optional		ALIGNMENT & ROAD TEST	OPTIONAL
	0.5		FRONT END ALIGNMENT (MINOR)	ALIGN
	0.5		ROAD TEST	OPTIONAL
MAN (LF)	1.5	1	HUB ASSEMBLY, FRONT AXLE (ONE SIDE)	
	0.6		WHEEL ASSEMBLY	R&R
	0.1		WHEEL BEARING DUST COVER	R&R
	0.2		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	R&R
	0.1		BRAKE DRUM	R&R
	0.3		ADJUSTING NUT, THRUST WASHER & WHEEL BEARING	R&R
	0.2		HUB	R&R
MAN (LF)	0.5	1	BRAKE CAMSHAFT SUPPORT BEARING	
	0.1		BRAKE SHOE SPRINGS	R&R
	0.1		BRAKE CAMSHAFT	R&R
	0.1		CAMSHAFT BEARING SUPPORT BRACKET	R&R
	0.1		CAMSHAFT SEALS	R&R
	0.1		NEEDLE BEARINGS	R&R
MAN (LF)	3.0	1	STEERING KNUCKLE (With Hub In Place)	
	0.5		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	Adjust

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.1		BRAKE RETURN SPRINGS, FRONT	R&R
	0.1		BRAKE SHOE ANCHOR PINS, FRONT	R&R
	0.1		BRAKE SHOE ASSEMBLY, FRONT	R&R
	0.4		BRAKE SHOE REBUILD (BOLTED LINING)	R&R
	0.2		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	ADJUSTMENT
ALL	0.6	1	TIRE & RIM ASSEMBLY, FRONT AXLE	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
MERITOR	1.7	1	S-CAM, FRONT AXLE (ONE SIDE)	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.2		BRAKE DRUM, FRONT	R&R
	0.1		BRAKE RETURN SPRINGS, FRONT	R&R
	0.3		SLACK ADJUSTER ASSEMBLY, FRONT	R&R
	0.2		S CAMSHAFT	R&R
	0.1		S CAMSHAFT BUSHING	R&R
	0.2		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	ADJUSTMENT
MERITOR	0.5	1	SLACK ADJUSTER, FRONT AXLE (ONE SIDE)	
	0.3		SLACK ADJUSTER ASSEMBLY, FRONT	R&R
	0.2		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	ADJUSTMENT
MERITOR	4.4	1	KING PIN ASSEMBLY, FRONT (BOTH SIDES)	
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.1		HUB CAPS	R&R
	0.1		OUTER NUT, LOCK WASHER & LOCKING RING	R&R
	0.1		INNER NUT & OUTER BEARING	R&R
	0.3		BRAKE DRUM, FRONT	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.6		TIRE & RIM ASSEMBLY, FRONT	R&R
	0.1		BRAKE DRUM, FRONT	R&R
MERITOR	3.9	2	REAR AXLE & SUSPENSION	
	0.6		LOWER RADIUS ROD (AT COACH END)	R&R
	0.6		UPPER RADIUS ROD (AT HOUSING)	R&R
	0.7		DRIVE SHAFT	R&R
	0.5		AIR SPRINGS (LOWER BOLTS ONLY)	R&R
	0.2		SHOCKS (LOWER NUTS ONLY)	R&R
	0.2		BRAKE LINES	R&R
	0.2		LEVELING VALVE LINKS	R&R
MERITOR	2.3	2	SUSPENSION SUNKS (Axle assembly removed)	
	0.3		CROSS TUBE ASSEMBLY	R&R
	0.3		CROSS STRUTS	R&R
	0.5		MUD FLAPS	R&R
	1		U - CLAMPS (0.5 per side)	R&R
	0.2		TORQUE	Torque
MERITOR	2.5	2	SUSPENSION SUNK ONE SIDE (Coach on wheel lifts)	
	0.2		AIR SPRING BOLTS (Lower bolts only)	R&R
	0.1		LEVELING VALVE LINK	Disconnect
	0.2		LOWER SHOCK BOLTS	R&R
	0.3		MUD FLAP	R&R
	0.3		RADIUS ROD (At coach end)	Disconnect
	0.2		CROSS MEMBERS	R&R
	1		U - BOLTS	R&R
	0.2		TORQUE	Torque

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.2		BRAKE DRUM	R&R
	0.5		BRAKE SHOE RETURN SPRING	R&R
	0.5		BRAKE CHAMBER	R&R
	0.2		SLACK ADJUSTER	R&R
	0.3		CAMSHAFT SUPPORT BRACKET	R&R
	0.2		TIE ROD END	R&R
	0.2		LUBRICATION LINE & GREASE NIPPLE	R&R
	0.1		SNAP RINGS	R&R
	0.1		KING PIN COVERS	R&R
	0.1		KING PINS	R&R
	0.1		THRUST BEARING & SHIMS	R&R
MAN (LF)	1.5	1	WHEEL STUDS, FRONT AXLE (ONE SIDE)	
	0.6		WHEEL ASSEMBLY	R&R
	0.2		BRAKE DRUM, FRONT	R&R
	0.1		BRAKE SHOE RETURN SPRING	R&R
	0.6		WHEEL STUD (QTY. OF 10)	R&R
MAN (LF)	2.5	1	BRAKE SHOES, FRONT AXLE (ONE SIDE)	
	0.6		WHEEL ASSEMBLY	R&R
	0.1		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	Adjust
	0.1		BRAKE DRUM	R&R
	0.1		BRAKE RETURN SPRINGS, FRONT	R&R
	0.1		LOCKING WEDGE	R&R
	0.1		BRAKE SHOE ANCHOR BOLTS	R&R
	0.2		BRAKE SHOE ANCHOR BOLT BUSHINGS	R&R
	0.2		BRAKE SHOE ROLLER BUSHINGS	R&R
	0.1		ANCHOR PIN BUSHINGS	R&R
	0.8		BRAKE SHOE LINING RIVETS OR BOLTS	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
MERITOR	2.7	2	AXLE & HUB ASSEMBLY REAR	
	0.3		DRAIN OIL (From Axle Ends And Housing)	DRAIN/FILL
	0.6		WHEEL ASSEMBLY, REAR	R&R
	0.2		BRAKE CHAMBER	R&R
	0.2		SLACK ADJUSTER	R&R
	0.2		BRAKE DRUM, REAR	R&R
	0.3		PLANETARY BOLTS & HEX NUT	R&R
	0.2		PLANETARY & AXLE SHAFT	R&R
	0.2		AXLE SHAFT & PLANETARY HOUSING SEPARATION	R&R
	0.1		PLANETARY GEAR LOCKING PLATE & WASHER	R&R
	0.1		RING GEAR HUB & BEARINGS	R&R
	0.1		WHEEL HUB	R&R
	0.2		SPINDLE	R&R
MERITOR	3	2	BRAKE ASSEMBLY, REAR (ONE SIDE)	
	0.6		WHEEL ASSEMBLY, REAR	R&R
	0.2		BRAKE DRUM, REAR	R&R
	0.1		A B S SENSOR	R&R
	0.1		BRAKE RETURN SPRINGS	R&R
	0.1		CAM ROLLERS	R&R
	0.1		BRAKE SHOE ANCHOR PINS, REAR	R&R
	0.1		ANCHOR PIN BUSHINGS	R&R
	0.1		BRAKE SHOE ASSEMBLY, REAR	R&R
	0.8		BRAKE SHOE LINING, REAR	R&R
	0.2		BRAKE CHAMBER, REAR	R&R
	0.2		SLACK ADJUSTER, REAR	R&R
	0.2		CAM SHAFT & BUSHINGS, REAR	R&R
	0.2		BRAKE SPIDER ASSEMBLY, REAR	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.1		BRAKE ADJUSTMENT	R&R
MAN (LF)	0.4	1	SLACK ADJUSTER, FRONT AXLE (ONE SIDE)	
	0.3		SLACK ADJUSTER ASSEMBLY, FRONT	R&R
	0.1		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	Adjust
MAN (LF)	1.0	1	A B S SPEED SENSOR	
	0.6		WHEEL ASSEMBLY	R&R
	0.2		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	Adjust
	0.1		BRAKE DRUM	R&R
	0.1		SPEED SENSOR	R&R
MAN	2.0	1	A B S PULSE GENERATING WHEEL	
	1.5		HUB ASSEMBLY (Refer to Hub Section)	R&R
	0.5		PULSE WHEEL	R&R
MAN	2.5	1	WHEEL BEARINGS & RACE	
	1.5		HUB ASSEMBLY	R&R
	0.1		OUTER BEARING	R&R
	0.1		INNER BEARING	R&R
	0.2		INNER WHEEL GREASE COLLECTOR	R&R
	0.6		INNER / OUTER BEARING RACE	R&R
MAN	0.7	1	BRAKE CHAMBER ASSEMBLY, FRONT AXLE (ONE SIDE)	
	0.5		BRAKE CHAMBER, FRONT	R&R
	0.2		BRAKE ADJUSTMENT (ONE FRONT WHEEL)	Adjust
MAN	0.7	1	BRAKE DRUM, FRONT AXLE (ONE SIDE)	

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.3		AXLE SEAL COLLAR	R&R
MAN (LF)	0.75	2	PLANETARY GEARING	
	0.75		CHECK SERVICE MANUAL	R&R
MAN (LF)	3.3	2	BRAKE ASSEMBLY, REAR (ONE SIDE)	
	0.5		WHEEL ASSEMBLY, REAR	R&R
	0.6		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	Adjust
	0.1		BRAKE SHOE BACKING PLATE	R&R
	0.1		BRAKE DRUM	R&R
	0.1		BRAKE SPRINGS	R&R
	0.1		BRAKE SHOE ANCHOR BOLT (LOCKING BOLT, PLATE & BUSHINGS)	R&R
	0.1		BRAKE SHOE ANCHOR PINS	R&R
	0.1		ANCHOR PIN BUSHINGS	R&R
	0.2		BRAKE SHOE ROLLER BUSHINGSSS	R&R
	0.1		BRAKE SHOE ASSEMBLY	R&R
	0.7		BRAKE SHOE LINING	R&R
	0.3		CLEAN BRAKE SHOE BODY	Clean
MAN (LF)	2.6	2	CAMSHAFT SUPPORT BEARING	
	0.2		OIL	Drain
	0.7		WHEEL ASSEMBLY	R&R
	0.1		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	Adjust
	0.1		BRAKE DRUM	R&R
	0.1		BRAKE RETURN SPRINGS	R&R
	1		HUB	R&R
	0.1		SLACK ADJUSTER	R&R
	0.1		CAMSHAFT	R&R
	0.2		CAMSHAFT SEAL RETAINER, SEAL & BEARING	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
MERITOR	2.9 x 2	2	DIFFERENTIAL CARRIER ASSEMBLY	
	0.7		DIFFERENTIAL OIL	DRAIN/FILL
	0.6		AXLE SHAFTS	R&R
	0.6		PROPELLER SHAFT FLANGE & YOKE	R&R
	0.6		CARRIER MOUNTING BOLTS	R&R
ALL		2	STAND ALONE ITEMS	
	1.0		REAR AIR SPRING (COMPLETE UNIT)	R&R
	0.5		LOWER RADIUS ROD (REAR)	R&R
	0.4		SHOCK ABSORBERS (REPLACEMENT)	R&R
	0.3		BRAKE CHAMBER, REAR	R&R
	2.0		BRAKE SHOE LINING, (One Side)	R&R
	0.5		LEVELING VALVE	R&R
	1.2		REAR RELAY VALVE	R&R
	0.9		WHEEL, DRUM, HUB, & SEAL	R&R
MAN (LF)	3.0 x 2 PEOPI	2	REAR AXLE & SUSPENSION	
	0.6		LOWER RADIUS ROD (AT COACH END)	R&R
	0.6		UPPER RADIUS ROD (AT HOUSING)	R&R
	0.6		DRIVE SHAFT	R&R
	0.6		AIR SPRINGS (LOWER BOLTS ONLY)	R&R
	0.2		SHOCKS (LOWER NUTS ONLY)	R&R
	0.3		BRAKE LINES, REAR	R&R
	0.1		LEVELING VALVE BRACKETS	R&R
MAN (LF)	2.5	2	SUSPENSION BEAM (AXLE ON COACH / ONE SIDE)	
	0.2		SHOCKS (LOWER NUTS ONLY)	R&R
	0.2		AIR SPRINGS (LOWER BOLTS ONLY)	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
MAN (LF)	2.7	2	DIFFERENTIAL CARRIER ASSEMBLY	
	0.5		DIFFERENTIAL OIL	Drain
	0.6		AXLE SHAFTS	R&R
	0.6		PROPELLER SHAFT FLANGE & YOKE	R&R
	0.6		CARRIER MOUNTING BOLTS	R&R
ALL	1.5 x 2	3	GEAR BOX (STEERING)	
	0.1		INSIDE ACCESS PANEL	R&R
	0.1		RAISE VEHICLE	Ease of Service
	0.1		UNDERSIDE ACCESS PANEL	R&R
	0.2		STEERING COLUMN INPUT SHAFT	R&R
	0.2		DRAG LINK AT PITMAN ARM	R&R
	0.2		POWER STEERING LINES	Disconnect
	0.2		STEERING BOX RETAINING BOLTS	R&R
	0.7		REMOVE STEERING BOX	R&R
ALL		3	STAND ALONE ITEMS	
	0.7		STEERING BOX	R&R
	0.8		POWER STEERING PUMP	R&R
	1.0		STEERING COLUMN	R&R
	0.3		STEERING WHEEL	R&R
MAN (LF)	2.5	3	STEERING GEAR BOX	
	0.5		POWER STEERING LINES	DISCONNECT
	0.2		CASTLE NUT, PITMAN ARM	R&R
	0.3		DRAG LINK	DISCONNECT
	0.5		PROPELLER SHAFT (AT STEERING BOX)	DISCONNECT

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.3		MUD FLAP (Partial Removal)	R&R
	0.1		LEVELING VALVE LINK	Disconnect
	0.2		CROSS MEMBERS	R&R
	0.3		LOWER RADIUS RODS (AT COACH END)	R&R
	1		U - CLAMPS	R&R
	0.2		TORQUE	Torque
MAN (LF)	1.5 per	2	WHEEL STUDS	
	0.7		WHEEL ASSEMBLY	R&R
	0.1		DRUM	R&R
	0.1		BRAKE RETURN SPRINGS	R&R
	0.6		WHEEL STUDS	R&R
MAN (LF)	1	2	PLANETARY GEAR HOUSING	
	0.2		DRAIN OIL	Drain
	0.1		SLACK ADJUSTER (ADJUST FOR EASIER DRUM REMOVAL)	Adjust
	0.2		PLANETARY GEAR COVER	R&R
	0.2		AXLE SNAP RING & AXLE	R&R
	0.1		BRAKE DRUM	R&R
	0.2		PLANETARY GEAR HOUSING	R&R
MAN (LF)	2.4	2	WHEEL HUB	
	0.2		OIL	Drain
	0.2		AXLE SHAFT	R&R
	1		HUB REDUCTION UNIT	R&R
	0.2		LOCK WASHER & INNER NUT	R&R
	0.2		RING GEAR	R&R
	0.1		OUTER BEARING & HUB	R&R
	0.2		INNER BEARING & OIL CATCH PLATE	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.3		BUMPER EXTENSION	R&R
	0.2		SURGE TANK LINES	Disconnect
	0.5		HYDRAULIC OIL LINES	Disconnect
	0.2		RADIATOR SUPPORT ROD	Disconnect
	0.5		LOWER SUPPORT CHANNEL, RADIATOR	R&R
ALL		6	STAND ALONE ITEMS	
	0.8		HYDRAULIC RESERVOIR SIGHT GLASS	R&R
	0.3		LOW COOLANT SENSOR	R&R
	1.2		SURGE TANK	R&R
	0.2		FAN CONTROLLER	R&R
	0.8		FAN DRIVE PUMP BELT	R&R
ALL	3	7	FUEL SYSTEM (LARGE DIESEL FUEL TANK)	
	0.4		FUEL	Drain/Fill
	0.3		PASSENGER SEAT	R&R
	0.1		COVER PLATE	R&R
	0.2		SUPPLY LINE	Disconnect
	0.2		RETURN LINE	Disconnect
	0.2		FUEL LEVEL VENT LINE	Disconnect
	0.2		FUEL LEVEL SENDER LINE	Disconnect
	0.3		FILLER TUBE CLAMPS	Disconnect
	0.5		TANK MOUNTING HARDWARE	R&R
	0.6		FUEL TANK	R&R
ALL	4.4	7	FUEL SYSTEM (SMALL DIESEL FUEL TANK)	
	0.2		FUEL	Drain/Fill
	0.3		PASSENGER SEAT	R&R
	0.1		COVER PLATE	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.5		GEAR BOX MOUNTING BOLTS	R&R
	0.5		GEAR BOX " U " BOLTS	R&R
	0.5		ROAD TEST (OPTIONAL)) not added to total	TEST
MAN (LF)	2.0	3	TRANSFER GEAR BOX	
	1.0		STEERING COLUMN " U " JOINT	R&R
	0.5		STEERING PROPELLER SHAFT (At transfer box)	R&R
	0.5		TRANSFER GEAR BOX RETAINING BOLTS	R&R
	0.5		ROAD TEST (OPTIONAL)) not added to total	TEST
ALL		3	STAND ALONE ITEMS	
	1.0		STEERING COLUMN " U " JOINT	R&R
	0.5		STEERING WHEEL	R&R
	0.6		DRAG LINK	R&R
	1.5		POWER STEERING PUMP	R&R
	1.5		HYDRAULIC RESERVOIR	R&R
	0.5		FILTER, HYDRAULIC RESERVOIR	R&R
	0.8		SIGHT GLASS	R&R
ALL		4	ENGINE EXHAUST COMPONENTS	
	0.5		MUFFLER MOUNT (RUBBER ISOLATOR)	R&R
	0.2		EXHAUST CLAMP	R&R
	1		MUFFLER CLAMP ASSEMBLY (AROUND MAIN BODY)	R&R
	0.2		UPPER "U" CLAMP	R&R
	0.3		MUFFLER	R&R
	0.1		MUFFLER CLOSE OUT (ON ROOF)	R&R
	0.5		FLEX CONNECTOR & BAND CLAMPS	R&R
	1		Particulate Filter	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.2		FILL TUBE	R&R
	0.4		CROSS OVER TUBE	R&R
	0.4		MOUNTING HARDWARE	R&R
	1		MUFFLER TANK (FUEL)	R&R
	1		QUICK RELEASE VALVE	R&R
	0.5		PRESSURE PROTECTION VALVE	R&R
	0.3		TANK	R&R
DIESEL	8.2	7	Fuel Tank 36" BUS	
	8		FUEL TANK REMOVAL FROM INTERIOR OF BUS	R&R
	0.2		Fuel	Drain/Fill
CNG	Misc times	7	C N G FUEL (stand alone items)	
	2.5		C N G FUEL TANK (LINCOLN COMPOSITES)	R&R
	0.2		REFUELING CONNECTOR	R&R
	0.8		FUEL TANK SOLENOID VALVE	R&R
	1.5		ITT REGULATOR	R&R
	2.0		ZERO PRESSURE REGULATOR	R&R
	0.2		P R D VALVE	R&R
	0.5		C N G RECOVERY	EVACUATE
	0.2		FUEL DOOR SENSOR	R&R
	0.5		FUEL "LOW PRESSURE INDICATOR"	R&R
	0.5		FUEL "HIGH PRESSURE INDICATOR"	R&R
LNG	Misc. times	7	L N G FUEL (stand alone items)	
	2.5		L N G FUEL TANK (Taylor - Wharton)	R&R
	2.5		HEAT EXCHANGER	R&R
	0.2		FUEL FILTER	R&R
	0.2		REFUELING CONNECTOR	R&R

ENGINE	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
ALL		4	ENGINE COMPONENTS (STAND ALONE ITEMS)	
	1		ENGINE MOUNTS (2)	R&R
	1		TRANSMISSION MOUNTS	R&R
	0.4		AIR FILTER	R&R
	1.3		STARTER MOTOR	R&R
	1		ALTERNATOR	R&R
	1		FILLER TUBE & DIPSTICK	R&R
	0.8		ENGINE OIL & FILTERS	R&R
	0.5		ALTERNATOR BELT	R&R
	0.8		ENGINE COMPARTMENT SWITCH BOX	R&R
ALL		4	STAND ALONE ITEMS	
	0.5		ENGINE MOUNT FRONT (ONE)	R&R
	0.3		EXHAUST MOUNTING BRACKET	R&R
	1.0		EXHAUST PIPE	R&R
	1.5		MUFFLER	R&R
	0.3		ENGINE BELT GUARD	R&R
	0.2		HINGED BELT GUARD (Swing out & remove)	R&R
ALL		5	TRANSMISSION (REFER TO OEM MANUAL)	
	0.8		DRIVE SHAFT	R&R
ALL	3.5	6	RADIATOR & CHARGE AIR COOLER	
	0.1		HEATER LINES	R&R
	0.6		DRAIN/FILL COOLANT	Drain / Fill
	0.3		BELT GUARDS	R&R
	0.4		CHARGE AIR COOLER TUBES	R&R
	0.4		RAD TUBES UPPER/LOWER	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	1		HEATER COIL (FLOOR HEATER)	R&R
	0.2		AIR FILTER (FLOOR HEATER)	R&R
	0.5		DEFROSTER MOTOR	R&R
	0.2		AIR FILTER (REAR HEATER UNIT)	R&R
	2		AUXILIARY COOLANT HEATER	R&R
	5		ENGINE AIR COMPRESSOR	R&R
ALL		12	**INTERIOR PANELS & APPLIED PARTS**	
	1		SIDEWALL PANEL	R&R
	1.5		CEILING PANEL	R&R
	0.3		REAR VIEW MIRROR	R&R
	0.3		EXIT DOOR MIRROR	R&R
	0.3		SUN VISOR	R&R
ALL		13	**EXTERIOR PANES & APPLIED PARTS**	
	0.5		CURBSIDE MIRROR	R&R
	0.5		DRIVERS MIRROR	R&R
	0.1/FT.		RUB RAIL RUBBER	R&R
	0.2/FT.		RUB RAIL ALUM. CHANNEL	R&R
	0.8		REAR BUMPER ASSEMBLY	R&R
	1		POLYURETHANE MODULE (Section of Bumper)	R&R
	0.3		WIPER ARM	R&R
	0.8		WIPER MOTOR	R&R
	0.8		WINDSHIELD WASHER RESERVOIR	R&R
	1.25		SPLASH GUARDS / MUD FLAPS (Front or Rear)	R&R
	1.25		FRONT BUMPER	R&R
	0.3		EXIT DOOR MIRRORS	R&R
	0.3		REAR VIEW MIRROR	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.8		FUEL TANK SOLENOID VALVE	R&R
	2		PRESSURE REGULATOR	R&R
	0.5		L N G RECOVERY (per tank)	EVACUATE
	0.2		FUEL DOOR PROXIMITY SWITCH	R&R
	2		TANK MANIFOLD ASSEMBLY	R&R
	2		PRESSURE CONTROL MANIFOLD	R&R
ALL	Misc. times	8	**AIR SYSTEM COMPONENTS (stand alone items)**	
	1.2		AIR DRYER	R&R
	0.2		AIR DRYER FILTER	R&R
	0.5		MUFFLER (Pkg) TANK	R&R
	0.2		AIR TANK DRAIN VALVE	R&R
	0.5		GOVERNOR	R&R
	0.8		AIR PRESSURE REGULATOR (BRAKE INTERLOCK)	R&R
	1.5		APPLICATION VALVE (BRAKE TREADLE)	R&R
	1		SPRING BRAKE CONTROL VALVE	R&R
	0.8		SOLENOID VALVE	R&R
	0.2		Q. R. VALVE	R&R
	0.2		TRANSDUCER	R&R
	0.3		BRAKE INTERLOCK MAGNETIC VALVE	R&R
	0.5		OIL SEPARATOR	R&R
	0.3		OIL SEPARATOR FILTERS	R&R
	0.3		CHECK VALVE	R&R
	1		AIR BRAKE RELAY VALVE	R&R
	0.2		PRESSURE PROTECTION VALVE	R&R
ALL		8	**STAND ALONE ITEMS**	
	0.5		BRAKE CHAMBER, REAR	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
ALL		13	**STAND ALONE ITEMS**	
	1.25		FRONT BUMPER	R&R
	0.2		MUD FLAP	R&R
	0.3		REAR VIEW MIRROR	R&R
	0.3		REAR VIEW MIRROR (EXTERIOR)	R&R
ALL		14	**WINDOWS**	
	1		WINDSHIELD (Left or Right)	R&R
	1		DRIVERS SIDE WINDOW	R&R
	1		PICTURE WINDOW	R&R
	1		PASSENGER WINDOW	R&R
	0.5		WINDOW GLASS	R&R
	0.2		RAPID REPLACEMENT WINDOW (Tip in window)	R&R
	0.5		VANDAL SHIELD	INSTALL
ALL		15	**ACCESS DOORS**	
	1.5		REAR EXTERIOR HVAC DOOR	R&R
	0.5		TRANSMISSION ACCESS DOOR (Exterior)	R&R
	1.5		ENGINE ACCESS DOOR (Exterior)	R&R
	0.7		RADIATOR DOOR	R&R
	0.5		FUEL FILLER DOOR	R&R
	0.8		ROOF VENT	R&R
	0.7		SIDE CONSOLE EXTERIOR DOOR	R&R
	0.5		SURGE TANK ACCESS DOOR	R&R
ALL		16	**ENTRANCE & EXIT DOOR SYSTEMS**	
	0.8		DOOR PANELS	R&R
	2.2		DOOR ASSEMBLY	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
ALL	Misc times	9	**ELECTRICAL**	
	0.2		MARKER LIGHT	R&R
	0.2		FLUORESCENT LIGHT	R&R
	0.3		BACK UP LAMPS	R&R
	0.2		STEPWELL (HEADER) LIGHT	R&R
	0.3		SEALED BEAM HEADLIGHT	R&R
	0.5		BATTERIES & LEADS	R&R
	1.3		STARTER MOTOR	R&R
	0.5		BATTERY CUT OFF SWITCH	R&R
	0.3		LOW AIR PRESSURE SWITCH	R&R
	0.7		VOLTAGE EQUALIZER	R&R
	1		BATTERY TRAY	R&R
	0.5		P.A. SPEAKER	R&R
	0.3		DIMMER SWITCH	R&R
	0.3		TURN SIGNAL SWITCH	R&R
	0.2		PLC MODULES (Add access time)	R&R
	1.5		PROCESSOR	R&R
	0.4		TOUCH TAPE (Less then 2ft.)	R&R
	1.5		TOUCH TAPE (Coach length)	R&R
ALL		10	**HVAC SYSTEM (check back of manual for Thermo King)**	
	1.5		DRIVERS HEATER / DEFROSTER UNIT	R&R
	0.5		HEATER / DEFROSTER MOTOR	R&R
	0.5		HEATER / DEFROSTER COIL	R&R
	0.5		HEATER VALVE	R&R
	0.2		AIR FILTER	R&R
	0.5		FAN / MOTOR ASSEMBLY	R&R
	1		BOOSTER PUMP	R&R
	0.5		FLOOR HEATER	R&R

VENDOR	TYPE	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	1		DOOR SHAFT LEVER ASSEMBLY	R&R
	0.3		DOOR SHAFT & ARM ASSEMBLY	R&R
	0.3		DOOR PANELS (PER PANEL)	R&R
	0.2		PIVOT ASSEMBLY, ENTRANCE DOOR TOP	R&R
	1		ENTRANCE DOOR SHAFT LEVER ASSEMBLY	R&R
	0.5		LEVER ASSEMBLY, ENTRANCE DOOR	R&R
	0.5		SPACER & BALL BEARING	R&R
	2.1		ENTRANCE DOOR SHAFT & ARM ASSEMBLY	R&R
	0.3		DOOR PANELS (PER PANEL)	R&R
	1		DOOR GLASS (UPPER AND LOWER)	R&R
	0.2		PIVOT ASSEMBLY, ENTRANCE DOOR TOP	R&R
	0.3		SEALS AND TRIM, ENTRANCE DOOR	R&R
	0.3		BRUSHES, ENTRANCE DOOR	R&R
	2.6		ENTRANCE DOOR MECHANISM OVERHAUL	R&R
	1.5		DOOR CYLINDER ASSEMBLY	R&R
	0.2		DOOR MAG VALVE	R&R
	0.3		LIMIT SWITCHES	R&R
	0.6		CONNECTING RODS, ENTRANCE DOOR	R&R
VAPORMF		16	EXIT & ENTRANCE DOOR STAND ALONE ITEMS	
	4.6		STEPWELL ASSEMBLY, REAR	R&R
	5.3		STEPWELL ASSEMBLY, FRONT	R&R
	0.5		AIR FILTER, BASEPLATE	R&R
	1		EXIT DOOR ADJUSTMENT (FIT & ALIGNMENT, CHECK & ADJUST)	ADJUSTMENT
	0.3		EXIT DOOR SPEED ADJUSTMENT	ADJUSTMENT
	0.3		EXIT DOOR HALL SENSOR VANE ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR EMERGENCY LINKAGE ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR LS3 SENSOR ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR LOCK SOLENOID ADJUSTMENT	ADJUSTMENT

VENDOR	TYPE	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.6		BASE PLATE ASSEMBLY(Welded)	R&R
	0.5		DOOR MOTOR	R&R
	1.5		DOOR MOTOR OVERHAUL	Overhaul
	0.2		ADJUSTING RODS	R&R
	0.5		EMERGENCY RELEASE VALVE (Dump Valve)	R&R
	1.2		DOOR SHAFT & ARM ASSEMBLY	R&R
	0.3		TOUCH TAPE	R&R
	0.1		MICRO SWITCH	R&R
	0.3		SEALS & TRIM	R&R
	0.2		GRAB HANDLE	R&R
	0.5		CHIME	R&R
	0.8		DOOR CONTROLLER	R&R
	0.5		DOOR GLASS	R&R
	1		HALL EFFECT LOCK PAWL SWITCH	R&R
	1		REAR DOOR BEARINGS	R&R
	1		REAR DOOR SOLENOID (MAG VALVE)	R&R
	0.5		ANNUNCIATE PANEL	R&R
	1		SONIC SENSOR	R&R
VAPORMF		16	SWING EXIT DOOR SYSTEMS	
	2.9		SWING EXIT DOORS	
	0.8		EXIT DOOR PANELS (BOTH)	R&R
	2.1		EXIT DOOR ASSEMBLY	R&R
	0.6		ELECTRO-PNEUMATIC EXIT DOOR ENGINE	R&R
	0.8		EXIT DOOR PANELS (BOTH)	R&R
	0.5		DOOR GLASS	R&R
	0.1		DOOR SHAFT LEVERS	R&R
	1.8		EXIT DOOR ASSEMBLY (ONE)	R&R
	0.4		RUBBER BUMPERS	R&R

VENDOR	TYPE	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.2		EXIT DOOR LOCK PRAWL TO CAM CLEARANCE ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR PANEL SENSOR ADJUSTMENT	ADJUSTMENT
	3		EXIT DOOR COMPLETE FUNCTIONAL TEST	ADJUSTMENT
	1		ENTRANCE DOOR ADJUSTMENT FOR FIT, CHECK & ADJUST	ADJUSTMENT
	0.3		ENTRANCE DOOR SPEED ADJUSTMENT	ADJUSTMENT
	3		ENTRANCE DOOR COMPLETE FUNCTIONAL TEST	TEST
	1.2		EXIT DOOR EMERGENCY RELEASE VALVE	TEST
	1		ENTRANCE DOOR EMERGENCY RELEASE VALVE	R&R
	1		DOOR CONTROLLER	R&R
	0.5		DOOR CONTROLLER MODULE	R&R
	0.5		ENUNCIATOR PANEL	R&R
				R&R
ALL		17	SEATING	
	1		DRIVERS SEAT	R&R
	0.5		DRIVERS SEAT BELT	R&R
	0.8		PASSENGER SEAT (Double)	R&R
	0.1		SEAT INSERTS	R&R
	1		WHEELCHAIR FLIP SEAT	R&R
ALL		18	DESTINATION SIGNS	
	1.2		DESTINATION SIGN ASSEMBLY (Front)	R&R
	1		DESTINATION SIGN ASSEMBLY (Side)	R&R
	0.5		REAR ROUTE SIGN	R&R
	0.5		DECODER BOARD	R&R
	0.8		DESTINATION SIGN CONTROL BOARD	R&R
	0.8		PROCESSOR BOARD	R&R
	1		DESTINATION SIGN GLASS (On coach)	R&R
ALL		19	DRIVERS CONTROLS	

VENDOR	TYPE	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.3		SEALS & TRIM	R&R
	0.3		DOOR BRUSHES	R&R
	0.3		HANDLE	R&R
	0.3		TOUCH TAPE	R&R
	3.8		EXIT DOOR BASEPLATE OVERHAUL	OVERHAUL
	1.8		BASE PLATE ASSEMBLY	R&R
	0.2		EXIT DOOR AIR CYLINDER	R&R
	0.2		DOOR SOLENOID & BRACKET ASSEMBLY	R&R
	0.2		HALL EFFECT LOCK PRAWL SWITCH	R&R
	0.1		CAM ASSEMBLY	R&R
	0.2		MICRO / LIMIT SWITCHES	R&R
	0.5		SKINNER VALVE	R&R
	0.1		BASEPLATE BUSHINGS	R&R
	0.2		ELECTRIC SOLENOID	R&R
	0.1		RETURN SPRING	R&R
	0.2		CONNECTING RODS	R&R
	1.4		EXIT DOOR SOLENOID AND BRACKET ASSEMBLY	R&R
	0.2		BRACKET ASSEMBLY	R&R
	0.3		EXTENSION SPRING	R&R
	0.2		LEVER ASSEMBLY	R&R
	0.1		END PLAY SPACER AND BUSHING	R&R
	0.1		CAM ASSEMBLY	R&R
	0.2		EMERGENCY CONNECTING ROD ASSEMBLY	R&R
	0.2		LOCK PRAWL ASSEMBLY	R&R
	0.1		SENSOR ASSEMBLY	R&R
VAPORMF		18	SLIDE GLIDE ENTRANCE DOORS	
	2.4		SLIDE GLIDE ENTRANCE DOOR ASSEMBLY	R&R
	0.8		CONNECTING RODS, ENTRANCE DOOR	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.15		PLATFORM SAFETY WALK	R&R
	0.45		BRIDGE HINGE	R&R
	0.3		HINGE CLAMP BAR, FWD/REAR (LIFT PLATFORM)	R&R
	1		HINGE CLAMP BAR, FWD/REAR (RAMP BARRIER)	R&R
	0.25		SLIDE LINK BEARING	R&R
	0.3		RAMP BARRIER LINKAGE ASSEMBLY	R&R
	0.45		BRIDGE / BARRIER WELDMENT	R&R
	0.15		WHEEL ASSEMBLY	R&R
	1.3		RAMP / BARRIER ASSEMBLY	R&R
	0.3		BRIDGE CYLINDER ASSEMBLY	R&R
	1		RAMP CYLINDER ASSEMBLY	R&R
	0.3		MANIFOLD ASSEMBLY / LINKAGE	R&R
	1		CABLE ASSEMBLY, POWER PLATFORM/ LIFT PLATFORM	R&R
	1		CABLE SHEATH	R&R
	0.45		SENSITIVE EDGE MOUNTING RAIL, FORWARD OR REAR	R&R
	0.3		SENSITIVE EDGE ASSEMBLY, FORWARD OR REAR	R&R
	0.45		SENSITIVE MAT ASSEMBLY, C/S OR R/S	R&R
	0.3		PROXIMITY SWITCH ASSEMBLY	R&R
	0.3		MISC. HYDRAULIC HOSE ASSEMBLY	R&R
	0.2		MISC. HYDRAULIC FITTINGS	R&R
	0.15		HANDRAIL, FORWARD OR REAR	R&R
	0.1		TRAY COVER	R&R
	0.45		STEP TREAD (RAMP BARRIER)	R&R
LIFT-U	31.85	20	WHEELCHAIR LIFT PART D: POWER PLATFORM ASSEMBLY	
	4		POWER PLATFORM ASSEMBLY	R&R
	2.15		BEARING BLOCK C/S OR R/S	R&R
	2.45		STOW SHIFT	R&R
	0.1		PLUNGER COVER	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.5		DASH GAUGE	R&R
	0.5		DASH INDICATOR STRIP	R&R
	0.5		DEFROSTER SWITCH	R&R
	0.3		TURN SIGNAL SWITCH	R&R
	0.2		HORN BUTTON	R&R
	0.5		PARKING BRAKE KNOB	R&R
	0.5		DIMMER SWITCH	R&R
	0.2		DASH FAN	R&R
	1.5		DRIVERS SEAT	R&R
	0.5		INTERIOR SPEAKER	R&R
	1		ACCELERATOR TREADLE (Complete)	R&R
	0.5		DRIVERS SEAT BELT	R&R
	0.4		DRIVERS BOOSTER FAN	R&R
	0.5		DOME LIGHT	R&R
	0.5		THROTTLE POSITION SENSOR	R&R
NF	2.9	20	WHEELCHAIR RAMP	
	0.8		HYD.PUMP/RESERVOIR ASSEMBLY	R&R
	0.6		MANIFOLD BLOCK	R&R
	0.2		SKID PLATE	R&R
	0.6		LIFT MECHANISM ASSEMBLY	R&R
	0.5		MICRO SWITCHES/LIMIT SWITCHES	R&R
	1.2		RAMP ASSEMBLY COMPLETE	R&R
	1.5		LIFT MECHANISM ASSEMBLY (AS A SEPARATE OPERATION)	R&R
LIFT-U	3.2	20	WHEELCHAIR LIFT	
	0.25		HANDPUMP ASSEMBLY	R&R
	0.1		MISC. HYD. HOSE ASSEMBLY	R&R
	0.1		MISC. HYD. FITTING	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	0.25		TARGET, STOW LEVEL./FLOOR HT.	R&R
	0.15		LATCH STRIKER	R&R
	0.05		SPLIT COLLAR	R&R
	2.3		TORQUE SHAFT COUPLING	R&R
	0.2		BUMPER STOPS FORWARD OR REAR	R&R
	0.2		STOW LATCH CYLINDER ASSEMBLY	R&R
	0.3		DRIVE MOTOR ASSEMBLY	R&R
	0.15		PRIMARY STOW / DEPLOY CHAIN	R&R
	3		PRIMARY KEYED SPROCKET	R&R
	1.3		SECONDARY STOW / DEPLOY CHAIN, FORWARD OR REAR	R&R
	2		SECONDARY KEYED SPROCKET, FORWARD OR REAR	R&R
	3		RETURN SPRING, FWD, OR REAR, MUST BE REPLACED IN PAIRS	R&R
	1.3		IDLER ASSEMBLY	R&R
	0.45		SLAVE CHAIN ASSEMBLY	R&R
	0.3		LIFT CHAIN ASSEMBLY	R&R
	0.2		CRUTCH ASSEMBLY	R&R
	3		MASTER ARM ASSEMBLY, FORWARD OR REAR	R&R
	0.45		SLAVE ARM ASSEMBLY, FORWARD OR REAR	R&R
	0.1		MISC. HYDRAULIC HOSE ASSEMBLY	R&R
	0.1		MISC. HYDRAULIC FITTINGS	R&R
	1		LIFT CYLINDER, FORWARD OR REAR	R&R
	1.3		CABLE ASSEMBLY, POWER PLATE / BHD.	R&R
	1		CABLE SHEATH, POWER PLATE / BHD.	R&R
	0.3		PROXIMITY SWITCH ASSEMBLY	R&R
	0.3		LIMIT SWITCH ASSEMBLY, CHAIN	R&R
	0.3		LIMIT SWITCH ASSEMBLY, STOW / DEPLOY	R&R
	0.15		LIMIT SWITCH ARM	R&R
HUBNER	8	21	ARTICULATED JOINT BELLOWS	

VENDOR	TIME	MANUAL SECTION	COMPONENT TASK DESCRIPTION	TASK
	1		HYD. POWER UNIT ASSEMBLY (12 or 24 v)	R&R
	0.15		FILTER HOUSING	R&R
	0.15		PRESSURE RELIEF VALVE	R&R
	0.15		SOLENOID 12V or 24V (HYD. POWER UNIT)	R&R
	0.45		DIRECTIONAL CONTROL VALVE ASSY (12 or 24 V)	R&R
	0.1		COIL ASSY. 12 or 24 V (DIRECTIONAL CONTROL VALVE)	R&R
	0.15		MANUAL ACTUATOR PIN (DIRECTIONAL CONTROL VALVE)	R&R
	0.2		CABLE ASSEMBLY VALVES	R&R
	0.3		J-BOX ASSEMBLY, AUTO OR SEPARATE DEPLOY	R&R
	0.1		COUNTER ASSEMBLY (12 OR 24V)	R&R
LIFT-U	5.75	20	WHEELCHAIR LIFT PART B: MAIN FRAME ASSEMBLY	R&R
	2		SLIDE CHANNEL WELDMENT (FWD.)	R&R
	2		SLIDE CHANNEL WELDMENT (REAR)	R&R
	0.45		CROSSMEMBER WELDMENT (R/S)	R&R
	0.45		CROSSMEMBER WELDMENMT (C/S)	R&R
	0.15		FRAME MOUNT WELDMENT	R&R
	0.05		EXTENSION SPRING	R&R
	0.15		STOW LATCH ASSEMBLY	R&R
	0.2		BUNDLE SUPPORT	R&R
	0.15		SWIVEL PLATE	R&R
	0.15		SPLASH SHIELD ASSEMBLY (C/S OR R/S)	R&R
LIFT-U	12.35	20	WHEELCHAIR LIFT PART C: LIFT PLATFORM ASSEMBLY	R&R
	1.3		LIFT PLATFORM ASSEMBLY	R&R
	0.15		HOSE/CABLE CLAMP	R&R
	0.05		CLOSEOUT FLAP WELDMENT	R&R
	0.05		CLOSEOUT FLAP CLAMP	R&R
	0.15		STOW GUIDE FWD. OR REAR	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	1		PASSENGER SEATS	R&R
	0.5		BELLOW CLOSEOUTS (Interior skirt)	R&R
	0.5		INTERIOR OVERHEAD MATERIAL	R&R
	0.7		EXTERIOR BELLOW EXTRUSION (Rubber strip)	R&R
	1		UNDERSIDE HARDWARE & CLOSURE	R&R
	0.8		CABLES	R&R
	3.5		BELLOWS (Front coach, hoop assembly & rear of coach)	R&R
				R&R
HUBNER	5Hr. X 2	21	HUBNER RUBBER BEARING (KNUCKLE)	
	0.6		PASSENGER SEATS	R&R
	0.5		BELLOW CLOSEOUTS (Interior skirt)	R&R
	0.5		INTERIOR OVERHEAD MATERIAL	R&R
	0.6		EXTERIOR BELLOW EXTRUSION (Rubber strip)	R&R
	0.7		UNDERSIDE HARDWARE & CLOSURE	R&R
	0.5		CABLES	R&R
	0.3		BELLOWS AT FRONT OF COACH	R&R
	0.4		DECK PLATES	R&R
	0.3		CLAMPING BLOCK BOLTS	R&R
	0.3		BEARING BOLTS	R&R
	0.2		TORQUE TO SPEC	Torque
ATG	1	21	FLOOR PLATE ACCESS	
	0.8		JOINT PASSENGER SEATS	R&R
	0.2		FLOOR PLATES (LIFT / SECURE)	ACCESS
ATG	1.3	21	OPEN BELLOWS	
	0.4		HIP BOOT FLANGE PLATES (2)	R&R
	0.2		BUCKLE STRAPS	DISCONNECT
	0.2		RETAINING STRIP	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.3		TURNBUCKLE ASSEMBLY	R&R
	0.2		SHOCK CORD ASSEMBLY	DISCONNECT
ATG	4	21	BELLOWS ASSEMBLY - ONE SIDE	
	0.4		HIP BOOT FLANGE PLATES (2)	R&R
	0.2		BUCKLE STRAPS	DISCONNECT
	0.2		RETAINING STRIP	R&R
	0.3		TURNBUCKLE ASSEMBLY	DISCONNECT
	0.2		SHOCK CORD ASSEMBLY	DISCONNECT
	0.2		TIE ROD ASSEMBLY	DISCONNECT
	2.5		BELLOWS SECTION	R&R
ATG	6.3	21	CENTER HOOP ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	0.3		HOOP CONTROL	DISCONNECT
	0.4		ROLLER ASSEMBLY	R&R
	0.4		BEARING, CENTER HOOP	R&R
	1		CENTER HOOP	R&R
	3.2		WRIST JOINT ASSEMBLY	R&R
ATG	3.5	21	WRIST JOINT ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.3		OPEN BELLOWS FOR SERVICE	ACCESS
	0.3		BOLT, 20MM X 2	R&R
	0.3		BOLT, 5 / 8" X 6	R&R
	0.6		WRIST JOINT	R&R
ATG	3.5	21	HYDRAULIC CYLINDER ASSEMBLY	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	0.5		HYDRAULIC SYSTEM, COMPLETE BLEED / FILL / ADJUST	CHK / ADJ.
	0.2		CYLINDER HOSE X 2	DISCONNECT
	0.3		CYLINDER PIN	DISCONNECT
	0.3		CYLINDER YOKE PIN	DISCONNECT
	0.2		CYLINDER	R&R
ATG	8.8	21	YOKE PLATE	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	5.3		CENTER HOOP ASSEMBLY	R&R
	0.3		CYLINDER PIN	DISCONNECT
	0.3		CYLINDER YOKE PIN	DISCONNECT
	0.2		CYLINDER	R&R
	0.5		BOLT, M16 X 8	DISCONNECT
	0.3		BOLT, 20MM X 2	DISCONNECT
	0.3		BOLT, YOKE PLATE 5 / 8" X 6	DISCONNECT
	0.6		WRIST JOINT	R&R
ATG	9.6	21	SLEWING RING ASSEMBLY	R&R
	8.8		YOKE PLATE	R&R
	0.3		BOLT, SLEWING RING 5 / 8" X 6	DISCONNECT
	0.3		SLEWING RING ASSEMBLY	R&R
	0.2		GREASE HOSES X 4	DISCONNECT
ATG	3.3	21	HYDRAULIC BLOCK ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.5		HYD. SYSTEM COMPLETE BLEED, FILL, CHECK & ADJUST	CHK. / ADJ.
	0.2		CYLINDER HOSE X 2	DISCONNECT
	0.3		ELECTRICAL HARNESS CONNECTIONS	DISCONNECT

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.1		PRESSURE GAUGE	DISCONNECT
	0.2		BOLT, M8 X 4	DISCONNECT
ATG	2.8	21	ACCUMULATOR ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.5		HYDRAULIC SYSTEM, COMPLETE BLEED / FILL / ADJUST	CHK. / ADJ.
	0.1		BLEED SCREW	CHK. / ADJ.
	0.3		ACCUMULATOR ASSEMBLY	R&R
ATG	4.6	21	A T G STAND ALONE ITEMS	
	3		HIGH PRESSURE SWITCH	R&R
	0.3		LOW PRESSURE SWITCH	R&R
	1		POSITION SENSOR	R&R
	0.3		HYD. SYSTEM PRESSURE TEST	TEST

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Deviation #: 11 Proposer: New Flyer of America

RFP #: 4000 Page: 131 Section: 4.8.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Reimbursement for Parts)
Port Authority shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The Port Authority reserves the right and the discretion to specify the reimbursement method or type; credit, check, parts, etc. The reimbursement shall be at the Contractor's list price cost of the part(s) at the time of repair and shall include taxes where applicable, and 25% of the part costs to cover part handling. If the part(s), when requested as reimbursement, are not available from the Contractor within the time limit (See Section 4.8.3.1), the Port Authority reserves the right to acquire parts and charge the Contractor the invoice price.

New Flyer's Deviation/Clarification:

New Flyer will cover a 15% handling charge to a maximum amount of $100 per claim. To assess a 15% or greater charge on large dollar value components is punitive and does not represent the true costs of administering the claim (paperwork).

Rationale (Pros & Cons):

Revised during 6/7/2010 teleconference:

New Flyer will cover a 15% handling charge to a maximum amount of $250 per claim.

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Deviation #: 12 Proposer: New Flyer of America

RFP #: 4000 Page: 131 Section: 4.8.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Reimbursement to Port Authority)
The Contractor shall, in a timely manner, reimburse Port Authority for all claims submitted and approved. Any and all claims submitted by Port Authority shall either be approved or denied within sixty (60) days of their receipt by the Contractor.
Any and all claims not denied by the Contractor shall be paid to Port Authority within sixty (60) days of receipt by the Contractor. All warranty claims unpaid sixty (60) days after the invoice date will be charged one and a half (1½) percent per month until the claim is paid.
Port Authority shall be supplied with written explanation for all denied claims within sixty (60) days of their receipt of said claim by the Contractor or said claim will be paid in full by Contractor.

New Flyer's Deviation/Clarification:

New Flyer will pay all valid warranty claims within sixty (60) days from the date that the failed components are received by New Flyer.

Rationale (Pros & Cons):

Revised during 6/7/2010 teleconference:

Port Authority Specification language remains. Deviation/ Clarification withdrawn.
Provided that failed parts are returned by Port Authority within

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Deviation #: 13 Proposer: New Flyer of America

RFP #: 4000 Page: 180 Section: 5.2.3.2.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wheelchair Restraint)
The wheelchair restraint system shall be warranted against operational problems resulting from manufacturing and/or design defects. Each restraint unit shall be serialized for warranty tracking purposes.

New Flyer's Deviation/Clarification:

New Flyer does not track serialized restraint systems for warranty purposes and we would like to discuss their requirement with the Port Authority to better understand why this is required.

Rationale (Pros & Cons):

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Deviation #: 14 Proposer: New Flyer of America

RFP #: 4000 Page: 207 Section: 4.2.6.8.8

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service (Video Surveillance System))
Telephone troubleshooting service shall be available 8:00 am to 5:30 pm CST, Monday through Friday and on weekends and holidays. For system failures which are not user or site serviceable, field swap service shall be available within 48 hours.

New Flyer's Deviation/Clarification:

The Port Authority's specified camera system supplier March Networks requires all clients to deal directly with them on any/all warranty issues. If March fails to provide the level of service required by The Port Authority, please inform New Flyer and we will work to remedy the situation as quickly as possible.

Please refer to the attached warranty parchment from March Networks. It highlights all of the warranty inclusion/exclusions, etc.

Best & Final Offer Revision:
Warranty parchment has been attached and was not provided with our original proposal submission.

Rationale (Pros & Cons):

[BAFO -Deviation]

MARCH

LIMITED PRODUCT WARRANTY

1.0 __Definitions.__ For the purposes of this Limited Product Warranty, "Products" mean hardware and/or software products which are manufactured by March Networks (including its manufacturing subcontractors). "Third-Party Products" means products (including hardware, software, or both) manufactured by parties other than March Networks. "You" and "Your" means a customer of March Networks who has purchased and/or licensed Products from March Networks.

2.0 __March Networks Hardware Warranty__

2.1 March Networks warrants that the Products which are hardware will be free from defects in material and will comply with March Networks' normal standards of workmanship for a period of:
(a) Twenty-four (24) months from the date of shipment for all 3000, 4000, and 5000 Series DVR Products by March Networks to You; and
(b) Twelve (12) months for all other March Networks Products.
Third Party Products will be warranted in accordance with Clause 4 below.

2.2 March Networks shall incur no liability under this Hardware Warranty unless:
(a) The allegedly defective Products are returned prepaid to March Networks within fifteen (15) days of the date of discovery of the alleged defect, in accordance with March Networks' then current repair procedures; and
(b) March Networks' tests disclose that the alleged defect is due solely to defects in material or workmanship.

2.3 March Networks' liability under this Hardware Warranty shall in any event be limited, at March Networks' option and expense to either the repair or replacement of the defective Product, or the reimbursement of the purchase price paid by You to March Networks for the defective Products. Any Products replaced by March Networks will become the exclusive property of March Networks.

2.4 In no event will March Networks be liable for damage to the Products resulting from improper handling during or after shipment, misuse, neglect, improper installation, operation or repair (other than by authorized March Networks personnel), alteration, accident, or for any other cause not attributable to defects in materials or workmanship on the part of March Networks.

3.0 __March Networks Software Warranty__

3.1 March Networks warrants that any software supplied as a March Networks Product or as part of a March Networks Product will function substantially in accordance with the functional description set out in the user manual supplied with the software for a period of ninety (90) days from the date of shipment by March Networks to You.

3.2 March Networks' sole obligation and Your sole remedy for a breach of this warranty shall be March Networks' good faith efforts to rectify the non-conformity or, if after reasonable efforts March Networks is unable to rectify the non-conformity, March Networks shall accept return of the software and refund to You the purchase price thereof. This warranty is available only once in respect of each licensed software program. March Networks shall have no obligation under this warranty if the software is modified or if the software is used with hardware or software not supplied or approved by March Networks.

3.3 March Networks warrants that it has put into place procedures and checkpoints in designing and providing software to protect against viruses or other malicious code (collectively called "viruses"). By purchasing the Products, You acknowledge and agree that March Networks cannot and does not guarantee or warrant that the software will be free of viruses upon installation and that You are responsible for implementing all necessary and proper procedures for safeguarding Your systems and data against viruses.

4.0 __Warranty on Third Party Products.__ THIS WARRANTY DOES NOT APPLY TO THIRD PARTY PRODUCTS. MARCH NETWORKS HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THIRD PARTY PRODUCTS. You are solely liable for registering Third Party Products with the manufacturer if registration is required as a condition of the manufacturer's warranty. Third Party Products which are defective must be returned to the manufacturer and not to March Networks.

5.0 __Disclaimer of Warranty__

5.1 IN NO EVENT SHALL MARCH NETWORKS BE LIABLE IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), IN STRICT LIABILITY OR OTHERWISE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES FOR A BREACH OF THIS LIMITED PRODUCT WARRANTY OR OTHERWISE WITH RESPECT TO THE PRODUCTS. IN NO EVENT SHALL MARCH NETWORKS' LIABILITY TO YOU OR TO ANY OTHER PARTY FOR BREACH OF ANY OF THE FOREGOING WARRANTIES EXCEED THE PURCHASE PRICE PAID BY YOU TO MARCH NETWORKS FOR THE DEFECTIVE PRODUCTS.

5.2 THE EXPRESS WARRANTIES SET OUT IN THIS LIMITED PRODUCT WARRANTY ARE IN LIEU OF ALL OTHER WARRANTIES, REPRESENTATIONS OR CONDITIONS, EXPRESSED OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR THOSE ARISING FROM STATUTE OR USAGE OF TRADE. YOU SHALL NOT MAKE ANY REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER RELATING TO THE PRODUCTS OR TO MARCH NETWORKS, WHICH EXCEED THOSE MADE BY MARCH NETWORKS IN THIS LIMITED PRODUCT WARRANTY.

CD-14134 REV 1.0

[BAFO]

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Deviation #: 15 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.1

Complete Description of Deviation:

__Port Authority Specification Requirement:__

(Engine)
Engine Starter shall be warranted for a period of three years

__New Flyer's Deviation/Clarification:__

New Flyer's proposal is based on providing a 1 year/100,000 miles (whichever occurs first) Delco (parts only) warranty. If the Port Authority elects to purchase the optional warranty quoted within Exhibit #11, this deviation can be removed.

Rationale (Pros & Cons):

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Deviation #: 16 Proposer: New Flyer of America

RFP #: 4000 Page: 213 Section: 5.3.1.3.2

Complete Description of Deviation:

__Port Authority Specification Requirement:__

(Cooling System)
Radiators of welded tank construction are only acceptable with a 12 year warranty.

__New Flyer's Deviation/Clarification:__

New Flyer proposal is based on providing a 1 year/50,000 miles (whichever occurs first) Thermasys Radiator warranty.

__**Best & Final Offer Revision:**__
The warranties for either the baseline all-electric or optional hydraulic cooling systems are clarified below:

- EMP (All Electric) = 2 years/100,000 miles (100% parts and labor)
- General Thermasys (Hydraulic) = 2 years/100,000 miles (parts and labor – NOTE: labor is covered up to three (3) hrs. per claim and must be pre-authorized before repair is performed.)

Rationale (Pros & Cons):

[BAFO -Deviation]

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Deviation #: 17 Proposer: New Flyer of America

RFP #: 4000 Page: 232 Section: 5.3.6.6.2

Complete Description of Deviation:

__Port Authority Specification Requirement:__

(Batteries)
Warranty - 24 months from date coach first placed in service by Port Authority

__New Flyer's Deviation/Clarification:__

The battery warranty is 1 year 50,000 miles (whichever occurs first) and the property must deal directly with battery manufacturer for any warranty issues. New Flyer will cover labor only.

Rationale (Pros & Cons):

Clarified during 6/7 teleconference and review of Port Authority current battery supply contract.

Warranty for the coach batteries is for a period of 24 months

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Deviation #: 18 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Manual format)
The publications shall be designed for continuous, long term service and employ a loose leaf design which shall accommodate revisions to the manuals. All covers shall be heavy-duty, resistant to oil, moisture, and wear to a high degree commensurate with their usage. Line drawings required are to be reduced in size.

New Flyer's Deviation/Clarification:

New Flyer Bus Draft Manuals will be supplied as per format specification. OEM supplier published manuals can only be supplied as made available by each OEM supplier.

Rationale (Pros & Cons):

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Deviation #: 19 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Sample Manual)
Six weeks after notice to proceed (NTP) the Contractor shall deliver two (2) basic maintenance, parts, and operator's manuals to Port Authority. These manuals should represent the Contractor's standard bus in the general configuration that Port Authority has ordered.

New Flyer's Deviation/Clarification:

New Flyer will supply Sample manuals on CD for this requirement. The sample manual will be a copy of a previous customer's bus manuals similar in bus model only.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 20 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General –Manual Review)
Additionally, Port Authority will review the manuals for format, quality, clarity, and completeness. Information from this review will be given to the Contractor to assist in the formulation of the final customized manuals.

New Flyer's Deviation/Clarification:

New Flyer Bus Manuals are open for review of content completeness and accuracy only. Organization, structure, writing style and format are set and not open for change.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 21 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Parts Listing)
A preliminary Bill of Materials (build list)/vendor cross reference list, recommended spare parts list, and a recommended tool and equipment list shall be supplied as soon as available but prior to delivery of the pilot bus for initial review.

New Flyer's Deviation/Clarification:

A parts listing including recommended stocking can only be supplied with Pilot bus as it will be generated from the Draft Parts Manual which will be published for Pilot Bus.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 22 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Electronic Media)
Also, all material contained in all manuals shall be placed on electronic media, i.e. computer software or equivalent, shall be menu driven and generally follow the paper manuals. The electronic data must be compatible with the Authority's computer software program.

New Flyer's Deviation/Clarification:

New Flyer Bus Manuals will be supplied only in PDF format.

When available, OEM supplier manuals are only available in PDF format. New Flyer will provide what is made available however it is important to note that all copyright restrictions on the use of the files and must be followed.

Rationale (Pros & Cons):

Clarified during 6/7/2010 teleconference;

Port Authority requires the ability to separate bus manuals into smaller files, usually based on topic, to accommodate our internal electronic document distribution practices.

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

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Deviation #: 23 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Manual Organization)
The coach shall be treated as a whole and not as a grouping of disassociated parts. The material in all manuals and the parts catalogs shall be similarly organized and indexed in accordance with thefollowing numbering system:

New Flyer's Deviation/Clarification:

New Flyer Bus Parts and Service Manuals are organized in a similar structure but cannot be re-organized to the Port Authority's structure. This is due to the amount of work involved and the relationship of our current structure to the source data.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

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Deviation #: 24 Proposer: New Flyer of America

RFP #: 4000 Page: 251-252 Section: 5.5.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Documentation)
All drawings, publication, catalogs and manuals including Training Materials required under this Specification shall be furnished in electronic form in addition to the form specified elsewhere in Port Authority of Allegheny County 252 this Specification. Electronic versions of these documents shall be furnished concurrent with
their submittal in hard copy form. The drawings shall be furnished in an electronic format compatible with the latest version of AutoCAD. Catalogs, publications manuals, lesson plans and training materials shall be furnished in the Adobe Acrobat electronic (both authoring and PDF) format. Two (2) sets of all documents in electronic format shall be provided.

New Flyer's Deviation/Clarification:

For electronic document supply, New Flyer Bus Manuals will be supplied in PDF format only. These files can be released for editing after the Port Authority signs a delivers the New Flyer limited license agreement. This includes drawings which are not available in Autocad format. New Flyer manuals must not be displayed or accessible via Internet, only a secure Intranet.

OEM supplier manuals that are available in PDF format will all contain copyright restrictions on the use of the files and must be followed. Editable electronic files from OEM suppliers are not available.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 25 Proposer: New Flyer of America

RFP #: 4000 Page: 252 Section: 5.5.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Documentation)
It is the Contractor's responsibility to secure and make whatever agreements are required to transfer component text and drawings to electronic media. When electronic media is delivered as part of this Contract, the Contractor shall supply the information with a site license agreement with no limitation(s) for reproduction or use by Port Authority within usual business practices.

New Flyer's Deviation/Clarification:

For electronic document supply, New Flyer Bus Manuals will be supplied in PDF format only. These files can be released for editing after the Port Authority signs a delivers the New Flyer limited license agreement. This includes drawings which are not available in Autocad format. New Flyer manuals must not be displayed or accessible via Internet, only a secure Intranet or network.

OEM supplier manuals that are available in PDF format will all contain copyright restrictions on the use of the files and must be followed. Editable electronic files from OEM suppliers are not available. Obtaining agreements for release of copyright restrictions on OEM supplier manuals is the responsibility of the Port Authority.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 26 Proposer: New Flyer of America

RFP #: 4000 Page: 253 & 254 Section: 5.5.3.2 & 5.5.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Maintenance & Parts Manuals)
Fifteen (15) manuals shall be provided. Thirty (30) additional copies of the manual shall be produced with laminated pages.

New Flyer's Deviation/Clarification:

In an effort to reduce the amount of paper printed and overall cost of hard copy manuals, New Flyer proposes to supply only 5 copies each on regular paper and on synthetic plastic paper (waterproof and durable)

Additional copies can be purchased through the parts order desk if required at a later date.

Best & Final Offer Revision:
Please remove this deviation. Our initial proposal was compliant to your publications/manuals requirements, and within our Price Proposal submission, we quoted the cost reduction associated with the suggested revision(s) above.

The Form for Cost Reduction Opportunities can be found at the end of our Best and Final Offer price proposal submission.

Rationale (Pros & Cons):

[BAFO -Deviation]

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 27 Proposer: New Flyer of America

RFP #: 4000 Page: 253 & 254 Section: 5.5.3.2 & 5.5.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Maintenance & Parts Manuals)
Fifteen (15) component specific maintenance manuals i.e.; engine, transmission, air conditioning, wheelchair ramp, destination sign, etc., shall be provided by the OEM for the appropriate unit as installed on vehicles covered under the contract. Thirty (30) additional copies of these manuals shall be produced with laminated pages. Copyright release shall be provided for component specific manuals to allow Port Authority to copy these manuals.

New Flyer's Deviation/Clarification:

In an effort to reduce the amount of paper printed and overall cost of hard copy manuals, New Flyer proposes to supply only 5 copies each on regular and synthetic plastic pages. OEM supplier Engine, Allison transmission and HVAC manuals are not available in plastic pages.

Additional copies can be purchased from each OEM supplier at a later date.

Obtaining agreements for release of copyright restrictions for reproduction on OEM supplier manuals is the responsibility of the Port Authority.

Best & Final Offer Revision:
Please disregard part of this deviation. Our initial proposal was compliant to your publications/manuals requirements in terms of quantities of manuals, and within our Price Proposal submission, we quoted the cost reduction associated with the suggested revision(s) above.

The Form for Cost Reduction Opportunities can be found at the end of our Best and Final Offer price proposal submission.

NOTE: The following language is still valid and a deviation is required to your specification:

OEM supplier Engine, Allison transmission and HVAC manuals are not available in plastic pages.

[BAFO -Deviation]

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 28 Proposer: New Flyer of America

RFP #: 4000 Page: 254 Section: 5.5.3.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Drawings)
The Contractor shall also furnish drawings for each of the bus windows. These shall show dimensions (with tolerances) of bare glass for the purpose of having replacement glass manufactured.

New Flyer's Deviation/Clarification:

New Flyer does not supply this proprietary information. New Flyer supplies replacement part numbers and an illustration within the parts manual.

Rationale (Pros & Cons):

Revised during 6/7/2010 teleconference:

New Flyer will provide 'glass prints' as specified.

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 29 Proposer: New Flyer of America

RFP #: 4000 Page: 254 Section: 5.5.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Changes and Revisions)
Following the publication of each manual required herein, the Contractor shall provide revisions covering any changes, whether required by change of design or procedures or due to error, and these revisions shall be kept current during the entire basic warranty period. Manual revisions shall be furnished to Port Authority before or coincidental with the arrival of any altered parts or components. Upon expiration of the basic warranty period, revisions shall be furnished to Port Authority, free of charge, as required until the bus is twelve (12) years old.

New Flyer's Deviation/Clarification:

New Flyer will supply revisions for all New Flyer Bus Manuals only. New Flyer will supply the most current version of each OEM component supplier manual. It is the responsibility of each OEM component supplier to make available revisions to their manuals for the Port Authority. New Flyer does not manage this process.

New Flyer will supply updates for New Flyer Bus Parts Manuals for a period of 12 years after final manual issue.

New Flyer will supply updates for New Flyer Bus Operators and Service Manuals for a period of 6 years after final manual issue.

Rationale (Pros & Cons):

4.1 BASIC PROVISIONS

4.1.1 WARRANTY REQUIREMENTS

Warranties in this document are in addition to any statutory remedies or warranties imposed on the Contractor. Consistent with this requirement the Contractor warrants and guarantees to Port Authority each complete coach, and specific subsystems and components as follows.

4.1.2 COMPLETE COACH

The coach is warranted and guaranteed to be free from defects for one year or 75,000 miles, whichever comes first, beginning on the in-service date of each coach. The coach shall maintain its structural and functional integrity for the warranty period. The warranty is based on regular operation of the coach under the operating conditions prevailing in Allegheny County and its surrounding contiguous counties.

4.1.3 SUBSYSTEMS AND COMPONENTS

Specific subsystems and components are warranted and guaranteed to be free from defects and related defects for the times and/or mileage's given in coach, subsystem, and component warranty.

COACH, SUBSYSTEM AND COMPONENT WARRANTY

Which ever Occurs First

ITEM	YEARS	MILEAGE
Basic Bus	1	75,000
Engine and associated cooling system(s)	5	300,000
Transmission and associated cooling system(s)	5	300,000
Brake System	3	150,000
(Excluding friction material but including valves, controls, accessories and compressor)		
Axle	5	300,000
Air Compressor and Dryers	3	150,000
Engine Starter and Drive	2	300,000
Alternator	3	150,000
Basic Body Structures	3	150,000
Batteries	1	75,000
Engine Exhaust aftertreatment system	5	100,000
Destination Sign System	3	150,000

Door Systems	3	150,000
Driver's Seat	1	75,000
HVAC System	3	N/A
HVAC Compressor	4	N/A
Wheel Chair Loading Device	3	N/A

COACH, SUBSYSTEM AND COMPONENT EXTENDED WARRANTY

Which ever Occurs First

ITEM	YEARS	MILEAGE
Starter and Drive	3	150,000
Basic Bus	1	75,000
Basic Body Structures	9	450,000
Driver's Seat	1	75,000

NOTE: Basic warranties must be provided. Extended warranties, if included in the contract, shall be added to the basic warranties at the sole discretion of the Port Authority. See proposal pages for additional information on warranties included in the contract.

If a subsystem or component supplier offers a warranty greater than the basic warranties, the warranty shall be offered to the Port Authority through the coach manufacturer. Copies of all documents explaining any warranties that are greater than the basic warranties shall be supplied to the Authority.

Documentation explaining any warranty limitations that are greater than the basic warranties must be supplied, in writing, by the coach manufacturer, to the Port Authority.

Subsystem component warranties shall be provided by the subsystem or component manufacturer. Evidence that the bus manufacturer has obtained these warranties must be provided prior to acceptance of the first coach.

4.2 VOIDING OF WARRANTY

The warranty shall not apply to any part or component of the coach that has been subject to misuse, negligence, accident, or that has been repaired or altered in any way so as to adversely affect its performance or reliability, except insofar as such repairs were in accordance with recognized standards of the industry. The warranty shall also be void if the Port Authority fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the Contractor's maintenance manuals, provided that the manuals are delivered as stated in section 5.

4.3 EXCEPTIONS TO WARRANTY

The warranty shall not apply to scheduled maintenance items, and items such as tires and tubes, nor to items furnished by Port Authority such as fare boxes, and other auxiliary equipment, except insofar as such equipment may be damaged by the failure of a part or component for which the Contractor is responsible.

In such cases where the Contractor is responsible, it shall be required to reimburse Port Authority for all costs it incurs, per Section 4.8 of this specification.

4.4 CONTRACTOR'S REPRESENTATIVE

The Contractor shall be responsible to have a knowledgeable individual, conversant with its coach and componentry, meet no less than twice each month at Port Authority's offices in Pittsburgh, PA to deal with day-to-day problems which may occur during the "Basic Coach Warranty" period. During the period of "Coach Delivery" this requirement shall be "full time". The Contractor's Representative shall have authority to settle disputes, agree on corrective measures and shall be empowered to bind the Contractor to any and all agreements made. This provision shall continue in force until relinquished or amended in writing by Port Authority.

4.5 DETECTION OF DEFECTS

If Port Authority detects a defect within the warranty periods as defined in Section 4.1, several actions may be taken. A warranty claim may be filed to cover the affected component or part, or if a defect does not involve a component or part, the Contractor will be notified. If the Contractor's representative cannot agree by telephone that the defect is covered, the defect must be reviewed by the Contractor and a Port Authority representative together and a decision made within 5 days. The status of warranty coverage on the defect shall be mutually resolved between Port Authority and the Contractor unless Port Authority and the contractor mutually agree that more time is needed to resolve a particular warranty claim. If no decision is made after 5 days and no mutually agreeable extension has be given, the Authority reserves the right to take corrective action on the defect in accordance with Section 4.8. This action will not void any warranty to any other component or subsystem on the coach.

4.6 SCOPE OF WARRANTY REPAIRS

When warranty repairs are required, Port Authority and the Contractor's Representative shall agree on the most appropriate course for the repairs and the exact scope of the repairs to be performed under the warranty. If no agreement is obtained within 5-days, Port Authority reserves the right to commence the repairs in accordance with Section 4.8.

4.7 FLEET DEFECTS

A fleet defect is defined as the failure of identical items covered by the warranty and occurring in the warranty period in a proportion of each type of coach delivered under this contract. For deliveries of over 50 coaches, the proportion shall be 20 percent, rounded off to the nearest coach. For deliveries of 10 to 49 coaches, the proportion shall be 25 percent, rounded off to the nearest coach.

The filing of a "Fleet Defect" by Port Authority must be acknowledged upon receipt, by the Contractor, in writing, within ten (10) working days. The filing of a "Fleet Defect" by Port Authority must be answered in writing, by the Contractor, within sixty (60) calendar days of receipt of said "Fleet Defect".

The Contractor shall correct a fleet defect under the warranty provisions defined in Section 4.0, Warranty Provisions. After determining a corrective method for the defect, acceptable to Port Authority, the Contractor shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same defect in all other coaches purchased under this contract. The work program shall include inspection and/or correction of the potential or defective parts in all of the coaches.

The warranty on items determined to be "Fleet Defects" shall be extended for the time and/or miles equal to the original warranty. This extended warranty on the affected item shall begin on the repair/replacement date for corrected items.

All "Fleet Defects" must be corrected within six (6) months of their notification filing and/or a corrective work program begun which is acceptable to Port Authority. Failure to do so, on the part of the Contractor shall make it liable for all costs incurred, should Port Authority elect to proceed to correct the defect(s) under Section 4.8, Repair Procedures.

4.8 REPAIR PROCEDURES

4.8.1 REPAIR PERFORMANCE

The Contractor is responsible for all warranty-covered repair work. To the extent practicable, Port Authority will allow the Contractor or its designated representative to perform such work. At its discretion, Port Authority 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.

No less than 30 days prior to the beginning of coach manufacture, the Resident Inspectors shall meet with the Contractor's quality assurance manager. They shall review the inspection procedures and checklists. The Resident Inspectors may begin monitoring coach construction activities two (2) weeks prior to the start of coach fabrication.

The Contractor shall provide securable office space for the Resident Inspectors in close proximity to the final assembly area. This office space shall be equipped with at least two desks, outside and interplant telephones, file cabinets, at least four chairs, and clothing lockers sufficient to accommodate the Resident Inspector staff. The Resident Inspectors shall have the use of a photocopy and fax machine. Although the Resident Inspectors may monitor the complete coach production process, they will also have access to all other areas of the bus plant including but not limited to materials storage and all offices (engineering, purchasing, archives, etc.). At the time of final coach inspection the Resident Inspectors shall be presented with a complete bus as it is intended for delivery to Port Authority. The area for inspection shall be in or near the final assembly area. The Resident Inspectors shall be provided a clean, well-lighted area including a hoist for underfloor inspections. Adequate time shall be provided for their inspections. 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.

3.8 INITIAL ENGINE START-UP

The fuel system shall be primed and pressure tested after installation of the engine in the coach and before it is started for the first time. The pressure test shall assure that the fuel system is free of leaks that can dilute engine oil. This requirement shall be verified by visual inspection of injectors and jumper lines with a minimum of 60 psi applied at the secondary fuel filter inlet and the fuel return line blocked. Ether and/or other starting aids shall not be used to initially start engine during coach assembly.

3.9 ACCEPTANCE

3.9.1 RESPONSIBILITY

Fully documented tests shall be conducted on each production coach following manufacture to determine its acceptance to Port Authority. These acceptance tests shall include pre-delivery inspections and testing by the Contractor/Port Authority, and inspections and testing by Port Authority after the coaches have been delivered. The included test forms represent minimum requirements only. Additional vehicle tests may be required, at the Contractor's manufacturing facility or at Port Authority's property to ensure compliance with the specifications.

3.9.2 PRE-DELIVERY TESTS

The Contractor shall conduct acceptance tests at its plant on each coach following completion of manufacture and before delivery to Port Authority. These pre-delivery tests shall include visual and measured inspections, as well as testing the total coach operation. The tests shall be conducted and documented in accordance with written test plans. Additional tests may be conducted at the Contractor's discretion to ensure that the completed coaches have attained the desired quality and have met the requirements in the technical specifications. This additional testing shall be recorded on appropriate test forms provided by the Contractor. A copy of each test record shall be provided to Port Authority.

The pre-delivery tests shall be scheduled and conducted with sufficient notice so that they may be witnessed by the Resident Inspectors, who may accept or reject the results of the tests. If rejected, coach will not be accepted by Port Authority until compliance with the tests is demonstrated. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each coach. The underfloor equipment shall be made available for inspection by the Resident Inspectors utilizing a coach hoist provided by the Contractor. A hoist, scaffold, or elevated platform shall be provided by the Contractor to easily and safely inspect coach roofs. Delivery of each coach shall require written authorization of a Resident Inspector. Authorization forms for the release of each coach for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each coach. Port Authority will not accept any coach if a copy of this release is not on board.

3.9.2.1 INSPECTION - VISUAL AND MEASURED

Visual and measured inspections shall be conducted with the coach 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 sub-systems that are designed to operate with the coach in a static condition do function as designed.

3.9.2.2 TOTAL COACH OPERATION

Total coach operation shall be evaluated during road tests. The purpose of the road tests is to observe and verify the operation of the coach as a system and to verify the functional operation of the sub-system that can be operated only while the coach is in motion.

Each coach shall be driven for a minimum of 15 miles during the road tests. Observed defects shall be recorded on the test forms. The coach 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 coach operation tests.

3.9.2.3 WATER TEST

A water test shall be performed after the coach is completed and operational.

A water test booth shall be utilized that provides water nozzles on both sides and the front and back of the coach. Each water nozzle shall be aimed perpendicular to the surface of the vehicle. All nozzles shall provide a minimum of 40 psi (measured at the nozzle tip).

The water test shall be performed continuously for twenty (20) minutes. The first ten (10) minutes shall be performed with the coach engine off. Then the engine shall be started and the remaining ten (10) minutes shall be performed with all coach systems operating.

3.9.3 POST DELIVERY TESTS

Port Authority shall conduct acceptance tests on each delivered coach. These tests shall be completed before coach is placed into revenue service. The purpose of these tests is to identify defects that have become apparent between the time of coach release and delivery to Port Authority. The post-delivery tests include visual inspection and coach operations.

Coaches that fail to pass the post-delivery tests are subject to non-acceptance. Port Authority shall record details of defects and shall notify the Contractor of non-acceptance of each coach after completion of the tests.

3.9.3.1 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.

3.9.3.2 COACH OPERATION

The road tests for total coach operation are similar to those conducted at the Contractor's plant. Operational deficiencies of each coach shall be identified and recorded.

4 WARRANTY PROVISIONS

(h) - Referenced on Agreement Page 2 of 6

3.2 QUALITY ASSURANCE ORGANIZATION FUNCTIONS

The quality assurance organization shall include the following minimum functions.

3.2.1 WORK INSTRUCTIONS

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

3.2.2 RECORDS MAINTENANCE

The quality assurance organization shall maintain and use records and data essential to the effective operation of its program. These records and data shall be readily available for review by the Resident Inspectors. Inspection and test records for this procurement shall be retained for a period of 15 years following acceptance of the last bus and shall be made available to Port Authority upon request.

3.2.3 CORRECTIVE ACTIONS

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

3.3 STANDARDS AND FACILITIES

The following standards and facilities shall be basic in the quality assurance process.

3.3.1 CONFIGURATION CONTROL

The contractor shall maintain drawings and other documentation that completely describe a qualified coach that meets all of the requirements of this specification. The quality assurance organization shall verify that each transit coach is manufactured in accordance with these controlled drawings and documentation. The contractor shall provide Port Authority a complete coach production history log for each coach which accurately lists each serialized component and the correct corresponding serial number for each such component installed on the delivered coach. The coach history log shall be a part of the coach when delivered.

3.3.2 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 coaches 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.

3.3.3 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.

3.3.4 EQUIPMENT USE BY RESIDENT INSPECTORS

The Contractor's gauges and other measuring and testing devices shall be made readily available for use by the Resident Inspectors to verify that the coaches 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.

3.4 CONTROL OF PURCHASES

The Contractor shall maintain quality control of purchases.

3.4.1 SUPPLIER CONTROL

The Contractor shall require that each supplier maintains 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 non-conforming materials.

3.4.2 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 coaches.

3.5 MANUFACTURING CONTROL

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.

3.5.1 COMPLETED ITEMS

A system for final inspection and test of completed transit coaches shall be provided by the quality assurance organization. It shall measure the overall quality of each completed coach.

3.5.2 NON-CONFORMING MATERIALS

The quality assurance organization shall monitor the Contractor's system for controlling non-conforming materials. The system shall include procedures for identification, segregation, and disposition.

3.5.3 STATISTICAL TECHNIQUES

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

3.5.4 INSPECTION STATUS

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

3.6 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 progress, and completed articles. As a minimum, it shall include the following controls.

3.6.1 INSPECTION STATIONS

Inspection stations shall be at the best locations to provide for the work content and characteristics to be inspected. Stations shall provide the facilities and equipment to inspect structural, electrical, hydraulic and other components and assemblies for compliance with the design requirements. Stations shall also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations shall as a minimum include underbody structure completion, body framing completion, body prior to paint preparation, water test after interior trim and insulation installation, engine installation completion, underbody dress-up and completion, coach prior to final paint touchup, coach prior to road test, and coach final road test completion.

3.6.2 INSPECTION PERSONNEL

A sufficient number of knowledgeable and trained Inspectors shall be used to ensure that all materials, components, and assemblies are inspected for conformance with the qualified coach design.

3.6.3 INSPECTION RECORDS

Acceptance, rework, or rejection identification shall be attached to inspected articles. Articles that have been accepted as a result of approved materials review actions shall be identified. Articles that have been reworked to specific drawing configurations shall not require special identification. Articles rejected as unsuitable or scrap shall be plainly marked and controlled to prevent installation on the coach. 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 Inspector during assembly shall be entered by the inspection personnel on a record that accompanies the major component, subassembly, assembly, or coach 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 non-conformity 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 non-conforming materials, Port Authority shall approve the modification, repair, or method of correction to the extent that the contract specifications are affected.

3.6.4 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 Port Authority.

3.7 RESIDENT INSPECTORS

Port Authority shall be represented at the Contractor's plant by Resident Inspectors.

They shall monitor, in the Contractor's plant, the manufacture of transit coaches built under this procurement. The Resident Inspectors shall be authorized to approve the pre-delivery acceptance tests, and to release the coaches for delivery. Upon request to the Quality Assurance supervisor, the Resident Inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include drawings, material standards, parts lists, inspection processing and reports, and records of defects. These files may be photocopied by the Resident Inspectors, provided they are not proprietary in nature. A copy of the Q.C. book which follows the bus through the assembly line must be given to the Resident Inspectors at the time the bus is completed.

2.51 DISPUTES

2.51.1 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 Port Authority's Contracting Officer for the Contract ("Contracting Officer"). This decision shall be final and conclusive unless within ten (10) days from the date of receipt of its copy of such decision, the Contractor mails or otherwise furnishes a written appeal to the Contracting Officer. In connection with any such appeal, the Contractor will be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Contracting Officer shall be binding upon the Contractor and the Contractor shall abide by the decision.

2.51.2 Unless other wise directed by Port Authority, the Contractor shall continue performance under this Contract while matters in dispute are being resolved.

2.51.3 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, except that the Contractor shall first exhaust all required dispute remedies prior to proceeding with any such other rights and remedies. Any suit or proceeding arising out of, or relating to, this Contract shall be commended only in a Commonwealth of Pennsylvania or Federal court located in Pittsburgh, Allegheny County, Pennsylvania, and the Contractor, and all of its subcontractors, hereby consent to the jurisdiction and venue of such courts.

2.51.4 The Contractor shall maintain, during the duration of the Contract, and for four (4) years after the completion thereof, an agent in Allegheny County, Pennsylvania authorized to accept notice and service of process on behalf of the Contractor.

2.52 CHOICE OF LAW

2.52.1 Except as otherwise expressly provided in the Contract Documents, the Contract shall be governed by the substantive laws of the Commonwealth of Pennsylvania, regardless of its conflict of law or choice of law provisions.

2.53 PENNSYLVANIA RIGHT TO KNOW LAW

2.53.1 Upon formalization of a Contract, if any, all Proposals submitted in response to the RFP may become "public records," as defined by the Pennsylvania "Right-to-Know Law," 65 P.S. § 67.101 *et. seq.* Subject to the specific exceptions under the Right-to-Know Law, Port Authority is required to make available, if requested in accordance with the Law, all "public records."

2.54 FLOW DOWN

2.54.1 The Contractor shall include in all subcontracts the provisions or appropriate versions of Sections 2.13, 0, 2.19, 0, 0, 0, 0, 0, 0, 2.30, 2.31, 2.32, 0, 2.34, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2.45, 0, 0, 0, 2.51, 0 and 0 hereof. The Contractor shall provide to Port Authority evidence of inclusion of said provisions in its subcontractor agreements.

3 QUALITY ASSURANCE

(g) - Referenced on Agreement Page 2 of 6

3.1 QUALITY ASSURANCE ORGANIZATION

The Contractor shall establish and maintain an effective in-plant quality assurance organization and program. It shall be a specifically defined organization and should be directly responsible to the Contractor's top management. All Proposers shall submit details of their Quality Assurance Program with their Technical Proposal, and provide a copy of their Quality Assurance Manual and an organizational chart for their Quality Assurance Department. The manual should address all the areas of concern listed in Section 3.0. This will further clarify the requirements for this submittal. The manufacturer's Quality Control Program should address the following areas as a minimum:

- Management Responsibility
- Quality System
- Document Control
- Product Identification
- Inspection and Testing
- Inspection, Measuring and Test Equipment
- Inspection and Test Status
- Control of Nonconforming Product
- Handling, Storage, Packaging, and Delivery
- Quality Records
- Training
- Statistical Techniques

Copies of Specific Quality Assurance Procedures regarding training shall also be provided, along with criterion used during the design phase, in addition to manufacturing, to demonstrate that the requirements of the specification regarding service life, corrosion protection, and finishes are being met.

3.1.1 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.

3.1.2 AUTHORITY AND RESPONSIBILITY

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

2.43 FLY AMERICA

2.43.1 The Contractor shall 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 is used, an appropriate certification or memorandum adequately explaining why service by 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 certification of compliance with the Fly America Act requirements.

2.43.2 The Contractor shall include the requirements of this Section in all subcontracts that may involve international air transportation.

2.44 FINANCIAL ASSISTANCE

2.44.1 The Contract may be financed, in part, through various Federal, state and local grants and is subject to the requirements of various Federal, state and local authorities. Any action taken by Port Authority in compliance with such requirements shall not be cause for any claim against Port Authority, FTA or any other Federal, state or local authorities by the Contractor.

2.44.2 Additionally, Port Authority may utilize, in part, American Recovery and Reinvestment Act ("ARRA") funds for this procurement. If ARRA funds are utilized, the Contractor shall provide to Port Authority all information required for ARRA reporting by the requested due date. Such information may include, but not be limited to, that which is requested by FTA and/or other governmental entities, including direct job hours worked, payroll dollars, job descriptions and other related information.

2.44.3 All reports, maps and other documents completed as part of this Contract, other than documents prepared exclusively for internal use by Port Authority or the Contractor, shall contain an appropriate notice of financial assistance by the Federal government and the Commonwealth of Pennsylvania.

2.45 GOVERNMENT OBLIGATIONS TO THIRD PARTIES

2.45.1 The Contractor acknowledges and agrees that, absent FTA's, the Commonwealth of Pennsylvania's and/or the County of Allegheny's express written consent, FTA, the Commonwealth of Pennsylvania and the County of Allegheny, respectively, are not parties to this Contract and shall not be subject to any obligations or liabilities to the Contractor or any other party pertaining to any matter resulting from this Contract.

2.45.2 The Contractor shall include the above clause in each subcontract financed, in whole or in part, with Federal assistance provided by FTA. Furthermore, the Contractor shall not modify such clause, except to identify the subcontractor, who will be subject to its provisions.

2.46 CHANGES IN LAW

2.46.1 The Contractor shall comply, at all times, with all applicable FTA, Federal, state and local laws, regulations, policies, procedures and related administrative practices as may be amended or promulgated from time to time during the term of the Contract. The Contractor's failure to so comply shall constitute a material breach of the Contract.

2.47 INCORPORATION OF TERMS

2.47.1 This Contract includes all applicable standard terms and conditions required by the Department of Transportation ("DOT") and/or by FTA, whether or not expressly set forth herein. All contractual provisions required by DOT and/or FTA, as set forth in FTA Circular 4220.1F, as amended, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all DOT and/or FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in the Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any Port Authority request which would cause Port Authority to be in violation of DOT and/or FTA terms and conditions.

2.48 DEBARMENT AND SUSPENSION CERTIFICATION REQUIREMENTS.

2.48.1 The Contractor acknowledges and agrees that this Contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify, and hereby does, 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.

2.48.2 The Contractor shall comply with 49 CFR 29, Subpart C and shall include the requirements to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into for this Contract.

2.48.3 By executing the Contract, the Contractor certifies as follows:

The certification in this Section is a material representation of fact relied upon by Port Authority. If it is later determined that the Contractor knowingly rendered an erroneous certification, in addition to remedies available to Port Authority, the Federal government may pursue available remedies, including, but not limited to, suspension and/or debarment. The Contractor shall comply with the requirements of 49 CFR 29, Subpart C throughout the period of the Contract. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

2.48.4 The Contractor shall provide immediate written notice to Port Authority if at any time, the Contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

2.49 BUS TESTING

2.49.1 The Contractor shall comply with 49 U.S.C. § 5323(c) and FTA's implementing regulations 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 Port Authority at a point in the process requested by Port Authority which will be prior to Port Authority's final acceptance of the first vehicle.

2) A manufacturer who releases a report under Subsection 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 and delivered to Port Authority shall have the identical configuration and major components as the vehicle in the test report, which must be provided to Port Authority prior to Port Authority'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 services 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.

2.49.2 The Contractor hereby certifies and represents that the vehicles (buses) being provided to Port Authority through the Contract comply with 49 U.S.C. § 5323(c) and FTA's implementing regulation at 49 CFR Part 665. The Contractor further understands and acknowledges that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the Contractor to civil penalties as outlined in DOT's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the Contractor understands and acknowledges that FTA may suspend or disbar the Contractor under the procedures in 49 CFR Part 29.

2.50 PRE-AWARD AND POST-DELIVERY AUDITS REQUIREMENTS

2.50.1 Each Proposer and Contractor shall comply with 49 U.S.C. § 5323(l) and FTA's implementing regulations at 49 CFR. Part 663 and provide the following certifications:

1) The Proposer and the Contractor shall complete and submit a declaration certifying either compliance or non-compliance with Buy America. If the Proposer certifies compliance with Buy America, within 5 business days of receiving a written request from Port Authority, it shall submit documentation which lists: component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and cost; and 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 as specified in the Buy America Audit Worksheet – Rolling Stock (**Error! Reference source not found.**, second page);

2) Each Proposer and the Contractor shall submit evidence that it will be capable of meeting all of the requirements of the Contract Documents;

3) The Contractor shall submit: manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS; or the manufacturer's certified statement that the vehicles will not be subject to FMVSS regulations; and

4) The Contractor shall submit a copy of the Altoona Test Report for each type of bus.

2.33.7 The total sum to be paid to the Contractor under Subsection 2.33.6 shall not exceed the Contract Sum as reduced by the amount of payments otherwise made and as further reduced by the value of that portion of the Contract not terminated. Except for normal spoilage, and except to the extent that Port Authority shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor under Subsection 2.33.6 the fair value, as determined by Port Authority, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to Port Authority.

2.33.8 In arriving at the amount due, if any, the Contractor under this Section, there shall be deducted:

1) All payments made to the Contractor applicable to the terminated portion of the Contract;

2) The value of the portion of the Work under the Contract which is not terminated;

3) Any claim which Port Authority may have against the Contractor in connection with the Contract; and

4) The agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the Contractor or sold, pursuant to this Section and not otherwise recovered by or credited to Port Authority.

2.34 RECORD RETENTION AND ACCESS

2.34.1 The Contractor shall maintain all books, records, accounts and reports required under, or used for, this Contract for a period of not less than four (4) 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 the Contractor agrees to maintain same until the Port Authority, FTA, the Comptroller General of the United States, or any of their representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto.

2.34.2 Upon request, the Contractor shall permit FTA, the Comptroller General of the United States, the Commonwealth of Pennsylvania, County of Allegheny, and Port Authority, or their representatives, access to: inspect, examine, make excerpts and transcripts, and copy any and all books, documents, papers, accounts, payrolls and other records and documents of the Contractor or its subcontractor(s), which are pertinent or relate to the Contract or the Work and to audit the books, documents, papers, accounts and records and documents of the Contractor and its subcontractors which are pertinent and/or relate to the Contract or the Work.

2.34.3 The Contractor shall not destroy any such documents or records without first offering them, free of charge, to Port Authority.

2.35 STEEL PRODUCTS PROCUREMENT ACT

2.35.1 This Contract is subject to the applicable provisions of the Pennsylvania "Steel Products Procurement Act," (73 P.S. §§1881, *et seq.*) and any amendments thereto.

2.36 MOTOR VEHICLE PROCUREMENT ACT

2.36.1 This Contract is subject to the applicable provisions of the Pennsylvania "Motor Vehicle Procurement Act" (62 Pa.C.S.A. § 3731, *et. seq.*), and any amendments thereto.

2.36.2 Any motor vehicles to be purchased, leased or rented by Port Authority in the performance of this Contract shall be motor vehicles manufactured or assembled in the United States of America, including all territory, continental or insular subject to the jurisdiction of the United States, and failure to comply with said provision shall render the Contractor or any subcontractor subject to suit for the recovery of all monies paid under this Contract as provided by the above Act.

2.37 MOTOR VEHICLE SAFETY STANDARDS

2.37.1 The Contractor agrees and acknowledges that the buses shall and will comply with all motor vehicle safety standards established by the Department of Transportation.

2.38 MOTOR VEHICLE SAFETY STANDARDS AND POLLUTION REQUIREMENTS

2.38.1 Upon the delivery of buses, the Contractor shall provide Port Authority with the certification, in writing, that:

1) The horsepower of each bus is adequate for the speed, range and terrain in which it will be required to operate and also, shall meet the demands of all auxiliary power equipment;

2) The buses comply with all motor vehicle safety standards established by the Federal government, the Commonwealth of Pennsylvania and/or the County of Allegheny;

3) The buses comply with all motor vehicle exhaust emission standards established by the Federal government, the Commonwealth of Pennsylvania and/or the County of Allegheny; and

4) The buses comply with all noise level standards established by the Federal government, the Commonwealth of Pennsylvania and/or the County of Allegheny.

2.39 ENVIRONMENTAL REQUIREMENTS

2.39.1 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.*

2) The Contractor agrees to report each violation to Port Authority and understands and agrees that Port Authority will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

3) 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.

2.39.2 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.*

2) The Contractor agrees to report each violation to Port Authority and understands and agrees that Port Authority will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

3) 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.

2.40 PREFERENCE FOR RECYCLED PRODUCTS

2.40.1 The Contractor shall comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act, 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.

2.41 ENERGY CONSERVATION

2.41.1 Contractor shall comply with the mandatory standards and policies relating to energy efficiency which are contained in the Commonwealth of Pennsylvania's Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act, 42 U.S.C. §§ 6321, *et seq.*

2.42 CARGO PREFERENCE

2.42.1 Use of United States-Flag Vessels - The Contractor agrees:

1) To use privately owned United States-Flag commercial vessels to ship at least 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 Contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;

2) 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 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); and

3) To include these requirements in all subcontracts issued pursuant to the Contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

2.32.5 If the completion of the Work by any of the methods specified above results in financial loss to Port Authority, it may:

1) Dispose of, in the manner it determines to be in its best interest, any of the equipment or materials it acquired under this Section, without further legal process. Equipment or materials not required for completion of the Work or for the recoupment of loss or legal charges or any balance remaining from the disposition of any materials or equipment after the deduction of losses, costs and any legal charges by Port Authority shall be turned over to the party legally or equitably entitled thereto.

2) Deduct from moneys due or to become due to the Contractor under the Contract or any other contract with Port Authority all costs and legal charges incurred by Port Authority, and Port Authority will credit the Contractor with the balance remaining from any disposal of the equipment or materials; and/or

3) In the event the costs or legal charges incurred by Port Authority, less the credits provided for, exceeds the sum which would have been payable under the Contract for the completed work, hold the Contractor or its surety liable to Port Authority for the amount of said excess.

2.32.6 Port Authority, in addition to any other rights provided herein, may require the Contractor to transfer title and deliver to Port Authority, in the manner and to the extent directed by Port Authority:

1) Any completed portion of the buses or other portion of the Work;

2) Such partially completed supplies, materials, parts, plans, drawings and documents which the Contractor specifically produced or specifically acquired for the performance of such part of this Contract as has been terminated; and

3) The Contractor shall, upon direction of Port Authority, protect and preserve property in the possession of the Contractor in which Port Authority has an interest.

2.32.7 If, after the Contractor is terminated under this Section, a determination is made that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued pursuant to Section 2.32 (TERMINATION FOR CONVENIENCE OF PORT AUTHORITY).

2.33 TERMINATION FOR CONVENIENCE OF PORT AUTHORITY

2.33.1 This Contract may be terminated by Port Authority in accordance with this Section in whole, or in part, whenever Port Authority determines that such termination is in its best interests. Any such determination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the Contract is terminated and the date upon which such termination becomes effective.

2.33.2 After receipt of a Notice of Termination and except as otherwise directed by Port Authority, the Contractor shall:

1) Stop work under the Contract on the date and to the extent specified in the Notice of Termination;

2) Place no further orders or subcontracts for materials, service, or equipment, except as may be necessary for completion of such portion of the Contract not terminated;

3) Terminate all orders and subcontracts to the extent that they relate to the terminated portion of the Contract;

4) Assign to Port Authority, in the manner at the time, and to the extent directed by Port Authority, all of the rights, title and interest of the Contractor under the orders and subcontracts so terminated, in which case Port Authority shall have the right, in its sole discretion, to settle or pay any claims arising out of the termination of such orders and subcontracts;

5) Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval of Port Authority, which approval shall be final for all the purposes of this Section;

6) Transfer title and deliver to Port Authority in the manner, at the times, and to the extent directed by Port Authority:

a) The fabricated or unfabricated parts, work in process, completed work, supplies and other material or equipment procured as a part of, or acquired in connection with the performance of, the portion of the Contract terminated; and

b) The completed or partially completed plans, drawings, information, and other property which, if the Contract had been completed, would have been required to be furnished to Port Authority.

7) Use its best efforts to sell, in the manner, at the time, to the extent, and at the price or prices directed or authorized by Port Authority, any property of the types referred to in Subsection 2.32.2(6), provided, however, that:

a) The Contractor will not be required to extend credit to any purchasers;

b) The Contractor may acquire any such property under the conditions prescribed by and at a price or prices approved by Port Authority; and

c) The proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by Port Authority to the Contractor under the Contract or shall otherwise be credited to the price or cost of the work or paid in such manner as Port Authority may direct.

8) Complete performance of such portion of the Contract as was not terminated by the Notice of Termination; and

9) Take such action as may be necessary, or as Port Authority may direct, for the protection and preservation of the property related to this Contract, which is in the possession of the Contractor and in which Port Authority has or may acquire an interest, until the effective date of termination.

2.33.3

1) At any time after expiration of a plant clearance period, the Contractor may submit to Port Authority a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of the items the disposition of which has been directed or authorized by Port Authority, and may request Port Authority to remove such items or enter into a storage agreement covering them.

2) Not later than fifteen (15) days thereafter, Port Authority may accept title to such items and remove them or enter into a storage agreement covering the same; provided, that the list submitted shall be subject to verification upon removal of the items, or if the items are stored, within forty-five (45) days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.

2.33.4 After receipt of a Notice of Termination, the Contractor may submit to Port Authority its termination claim, if any, in the form and with the certification prescribed by Port Authority. Such claim shall be submitted promptly but in no event later than sixty (60) days from the date of termination. Upon failure of the Contractor to submit its termination claim within the time allowed, Port Authority may determine, based on the information available, the amount, if any, due to the Contractor by reason of the termination, which decision shall be final and binding upon the Contractor, and will thereafter pay the Contractor the amount so determined.

2.33.5 Subject to the provisions of Subsection 2.33.4, the Contractor and Port Authority may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of the Contract pursuant to this Section which amount or amounts may include a reasonable allowance for profit for work done; provided, that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. No claims for loss of anticipated profits or overhead recovery shall be allowed for the work terminated.

2.33.6 In the event of the failure of the Contractor and Port Authority to agree upon the amount to be paid to the Contractor by reason of a termination pursuant to this Section, Port Authority may determine, based on the information available to Port Authority, the amount, if any due to the Contractor by reason of the termination and will pay to the Contractor the amounts determined as follows:

1) For completed work or goods accepted by Port Authority, a sum equivalent to the aggregate price for such work or goods computed in accordance with the price or prices specified in the Contract, appropriately adjusted for any saving of freight or other charges; and

2) The reasonable costs of settlement, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Contract and for the termination and settlement of subcontract thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to this Contract.

(b) The policy shall provide that "Port Authority of Allegheny County" be named as an Additional Insured for the Contractor's full limits of coverage on a primary and non-contributory basis, but in no case less than the limits specified. The policy shall be endorsed with a waiver of subrogation clause with respect to Port Authority; and neither the Contractor nor its insurer shall have any claim against Port Authority to the extent the claim is or should have been covered by insurance.

2. 29.5 Business Automobile Liability.

1) With a Combined Single Limit not less than:

$2,000,000 Each Accident.

2) Notes:

(a) The policy shall cover the use of all owned, hired and non-owned vehicles.

(b) The policy shall provide that "Port Authority of Allegheny County" be named as an additional insured for the Contractor's full limits of coverage on a primary and non-contributory basis, but in no case less than the limits specified.

2. 29.6 Transit/Cargo Insurance

1) The Contractor shall provide Transit/Cargo Insurance for all buses, equipment and other items while in transit to Port Authority's specified delivery site by any means of conveyance and/or connecting conveyances with a limit not less than the value of the largest single shipment. Coverage shall commence prior to shipment and continue until acceptance at the delivery site by Port Authority.

2. 29.7 The Contractor shall not commence performance of the Work until it has forwarded to Port Authority, for review and approval, certificate(s) of the insurance required. Such certificate(s) shall be in a form satisfactory to Port Authority and shall list the various coverages and limits. Policies shall be renewed upon expiration and continued in full force and effect until the Contract has been completed, in its entirety, and all the Work has been accepted by Port Authority.

2. 29.8 In addition to the other requirements of this Section, Port Authority shall be given a minimum of thirty (30) days written notice before any change or a cancellation is made effective for any of the insurance policies required by this Section and the request is approved by Port Authority.

2. 29.9 The fact that the Contractor has obtained the insurance required in the Contract Documents shall in no manner lessen nor affect the Contractor's other obligations set forth in any provision of the Contract Documents.

2. 29.10 The policies of insurance referenced above are not to contain any deductible or self insured retention, as applicable to Port Authority as an additional insured. In the event the insurance policies purchased by the Contractor pursuant to this Section contain any deductible or self insured retention provisions, the Contractor shall provide Port Authority with disclosure of said deductible or self insurance retention prior to execution of the Contract, which will be subject to Port Authority's written approval. If Port Authority approves any insurance policy that includes a deductible or self insured retention, the Contractor shall be responsible for payment of any and all deductibles or self insured retentions, whether owing from the named insured or Port Authority as an additional insured, applicable to the policies of insurance referenced herein.

2. 29.11 The Contractor shall be responsible that all subcontractors, suppliers, vendors, material dealers and visitors are insured in accordance with insurance referenced in this Section.

2.30 INDEMNIFICATION

2.30.1 The Contractor shall defend any and all suits, actions or claims brought against Port Authority, FTA and any other agencies identified in the Contract Documents, and their respective officers, directors, agents and employees, for and/or on account of any injuries or damages allegedly caused by, through, or in connection with the performance of the Contract and/or the Work, whether due to the use of defective materials, defective workmanship or on account of any act, omission or negligence of the Contractor and/or its employees, subcontractors, suppliers or agents or their failure to adhere to any applicable law, statute, code, rule or regulation; and shall indemnify and hold harmless Port Authority and FTA and their respective officers, directors, agents and employees from and against all loss, cost, damage and expense, including attorneys' fees, caused by or in any manner growing out of the improper or negligent performance by the Contractor, its employees, subcontractors, suppliers and/or agents, of the Contract and/or the Work; and shall pay, liquidate and discharge any and all valid claims and demands for injuries to persons and damage to property caused by, or in any manner growing out of, the performance of the Contract and/or the Work.

2.31 SUSPENSION OF WORK

2.31.1 Port Authority may order the Contractor in writing to suspend, delay, or interrupt all or any part of the Contract for such period of time as it may determine to be appropriate for the convenience of Port Authority.

2. 31.2 If the performance of all or any part of the Contract is for an unreasonable period of time suspended, delayed, or interrupted by an act of Port Authority in the administration of this Contract, or by Port Authority's failure to act within the time specified in the Contract, an adjustment will be made for any necessary increases in the cost or time of performance of the Contract (excluding profit) and the Contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay or interruption to the extent:

1) That performance would have been so suspended, delayed or interrupted by another cause, including the fault or negligence of the Contractor; or

2) For which an equitable adjustment is provided for or excluded under any other provision of the Contract.

2. 31.3 No claim under this Section shall be allowed:

1) For any cost incurred more than twenty (20) days before the Contractor's notification to Port Authority, in writing, of the particular act or failure to act upon which the claim is based; or

2) Unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the Contract.

2.32 TERMINATION FOR DEFAULT

2.32.1 Wherever in this Section the word "Contractor" appears, it shall also be construed to mean the surety in case of default and completion of the Contract by the surety.

2.32.2 The Contractor may be determined to be in default of this Contract and the Contract may be terminated for default if the Contractor:

1) Fails to begin the Work within the time specified in the Contract Documents;

2) Fails, solely in the opinion of Port Authority, to perform the Work in accordance with the Contract Documents;

3) Performs the Work unsatisfactory in the opinion of Port Authority;

4) Neglects or refuses to perform anew any portion of the Work rejected by Port Authority as defective or unsatisfactory;

5) Discontinues or suspends the prosecution of the Work without approval of Port Authority;

6) Fails to resume work which has been discontinued or suspended within ten (10) days after notice to do so;

7) Becomes insolvent, is declared bankrupt or commits any act of bankruptcy or insolvency;

8) Allows any final judgment to stand against it unsatisfied for a period of forty-eight (48) hours;

9) Makes an assignment for the benefit of creditors;

10) Fails or refuses, within ten (10) days after written notice by Port Authority, to make payment or show cause why payment should not be made of any amounts due for materials furnished, labor supplied or performed, equipment rentals and/or utility services rendered;

11) For any cause whatsoever, does not, solely in the opinion of Port Authority, carry on the Work in an acceptable manner; or

12) Fails to perform any other provision of the Contract Documents.

2.32.3 If Port Authority elects to take the prosecution of the Work out of the hands of the Contractor, Port Authority may, at its option, notify and require the surety to complete the Work in accordance with the Contract Documents.

2.32.4 If Port Authority elects to take the prosecution of the Work out of the hands of the Contractor and complete the work, Port Authority may, at its option, take all right, title and interest in and to the equipment and materials owned by the Contractor and assembled for use in the execution of the Work, and may use them for completion of the Work.

6) The Contractor shall comply with all state and Federal laws prohibiting discrimination in hiring or employment opportunities. In the event of the Contractor's noncompliance with the nondiscrimination clause of this Contract or with any such laws, this Contract may be terminated or suspended, in whole or in part, and the Contractor may be declared temporarily ineligible for further Commonwealth contracts, and other sanctions may be imposed and remedies invoked.

7) The Contractor shall furnish all necessary employment documents and records to, and permit access to its books, records and accounts by, the Port Authority and the Commonwealth Office of Administration, Bureau of Affirmative Action, for purposes of investigation to ascertain compliance with the provisions of this clause. If the Contractor does not possess documents or records reflecting the necessary information requested, it shall furnish such information on reporting forms supplied by the Port Authority.

8) The Contractor shall actively recruit minority contractors or contractors with substantial minority representation among their employees.

9) The Contractor shall include the provisions of this nondiscrimination clause in every subcontract, so that such provisions will be binding upon each subcontractor.

2.25 AMERICANS WITH DISABILITIES ACT

2.25.1 The Contractor shall comply with all applicable requirements of the Americans with Disabilities Act of 1990 (ADA); 42 U.S.C. § 11401 *et seq.*; Section 504 of the Rehabilitation Act of 1973, as amended, 19 U.S.C. § 792, 42 U.S.C. § 5301(d) and the Federal Regulations including any amendments thereto, 49 CFR Part 27, 49 CFR Part 38, 28 CFR Part 35, 28 CFR Part 36, 41 CFR Subpart 101-19, 29 CFR Part 1630, 49 CFR Part 64, Subpart F and 49 CFR Part 609.

2.26 DISADVANTAGED BUSINESS ENTERPRISE (DBE)

2.26.1 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%.

2.26.2 The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor and its subcontractors shall carry out the applicable requirements of 49 CFR Part 26 in the award and administration of this Contract, all applicable subcontracts and all other DOT assisted contracts and ensure that eligible DBEs have the maximum feasible opportunity to participate in this Contract and to document the results of all such activities. Failure by the Contractor or its subcontractors to carry out these requirements shall be a material breach of this Contract, which may result in the termination of this Contract or such other remedy as Port Authority deems appropriate.

2.26.3 The Contractor is required to document sufficient DBE participation to meet these goals or, alternatively, document adequate good faith efforts to do so, as provided for in 49 CFR 26.53. Award of this Contract is conditioned on submission of the following, prior to award of the Contract:

1. The names and addresses of DBE firms that will participate in this Contract;
2. A description of the work each DBE will perform;
3. The dollar amount of the participation of each DBE firm participating;
4. Written documentation of the Contractor's commitment to use a DBE subcontractor whose participation it submits to meet the contract goal;
5. Written confirmation from the DBE that it is participating in the Contract as provided in the Contractor's commitment; and
6. If the contract goal is not met, evidence of good faith efforts to do so.

2.26.4 The Contractor shall 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 Port Authority. In addition, the Contractor shall return any withheld retainage to each of its subcontractors no later than thirty (30) days after a subcontractor's work related to the Contract has been satisfactorily completed.

2.26.5 The Contractor must promptly notify Port Authority, whenever a DBE subcontractor performing work related to this Contract is terminated or fails to complete its work, and must make good efforts to engage another DBE subcontractor to perform at least the same amount of work. The Contractor may not terminate any DBE contractor in performing that work through its own forces or those of an affiliate without the prior written consent of Port Authority.

2.26.6 The Contractor shall include these requirements in all subcontracts of any tier.

2.27 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

2.27.1 Overtime Requirements

Neither the Contractor nor any subcontractor contracting for any part of the Work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate for all hours worked in excess of forty hours in such workweek.

2.27.2 Violation; Liability for Unpaid Wages; Liquidated Damages

In the event of any violation of the clause set forth in Subsection 2.27.1, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, the Contractor and such subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in Subsection 2.27.1 in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in Subsection 2.27.1.

2.27.3 Withholding for Unpaid Wages and Liquidated Damages

Port Authority shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or any subcontractor under this Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of the Contractor or such subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in Subsection 2.27.2.

2.27.4 Subcontracts

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this section.

2.28 SAMPLES

2.28.1 Samples, if required, must be furnished at the expense of the Contractor unless otherwise specified.

2.29 INSURANCE

2.29.1 The Contractor shall procure and cause its subcontractors to procure, within 10 (ten) days of the execution of the Contract by the Contractor and maintain at its own cost and expense, during the entire term of the Contract and the performance of the Work, the types and amounts of insurance listed in this Section with insurance companies authorized to operate in Pennsylvania and acceptable to Port Authority.

2.29.2 Limits may be satisfied by any combination of primary and excess or umbrella per occurrence policies.

2. 29.3 Worker's Compensation and Employer's Liability.

1) Workers' Compensation - in accordance with all applicable statutory limits.

2) Employer's Liability in an amount not less than:

$1,000,000 Each Accident
$1,000,000 Disease - Policy Limit
$1,000,000 Disease - Each Employee.

3) Note: Coverage shall be provided in accordance with the laws of the Commonwealth of Pennsylvania and the laws of such other jurisdictions as may apply.

2. 29.4 Commercial General Liability.

1) In an amount not less than:

$2,000,000 Each Occurrence
$4,000,000 General Aggregate
$2,000,000 Products -- Completed Operations Aggregate.

2) Notes:
(a) The Contractor shall maintain such Products and Completed Operations liability coverage for at least (2) years after the Contract has been completed, in its entirety, and all the Work has been accepted by Port Authority, and on a yearly basis, provide Port Authority with written evidence of such coverage.

2.20 INSPECTION

2.20.1 Port Authority shall be entitled to inspect all of the buses and other items to be provided by the Contractor. If, upon inspection, any material, equipment, system or other portion of a bus or other item is determined by Port Authority to be defective or fails to otherwise meet the requirements of the Contract Document, it may be rejected by Port Authority. The decision of Port Authority shall be final and rejected items shall be replaced by, and at the expense of, the Contractor.

2.21 DAMAGE BY CONTRACTOR/DEFECTIVE WORK

2.21.1 All loss or damage arising from any unforeseen obstruction or difficulties, either natural or artificial, which may be encountered in the prosecution of the Work, or the furnishing of the buses or other items required by the Contract Documents prior to the final acceptance thereof by Port Authority, or from any act or omission not authorized by the Contract Documents or any agent or person employed on the part of the Contractor or any agent or person employed by that person(s), shall be the responsibility of the Contractor.

2.21.2 If the Contractor furnishes items not meeting the requirements of the Contract Documents, and does not replace such items, or if there is a failure to deliver any item within the specified time, Port Authority reserves the right to purchase the same in the open market and deduct the expense, including any excess in price over that called for in the Contract, from the amount due the Contractor. If the amount due the Contractor is not sufficient to meet such expenses in excess price paid for, Port Authority may proceed against the Contractor and/or the surety.

2.21.3 The Contractor shall provide full and competent engineering services to handle any, and correct all, problems associated with the performance of the coaches. At least one qualified service engineer shall be available in the vicinity of the Pittsburgh area to render this service. The Contractor shall also provide Port Authority with the location of a parts warehouse which will serve the Pittsburgh area and give the best estimate of time required for delivery of parts.

2.22 ACCEPTANCE OF TITLE

2.22.1 Notwithstanding any provision of the Uniform Commercial Code or other applicable law, title to and risk of loss for any coach, system, subsystem, component, part, equipment or other item of the Work shall not vest in Port Authority until Port Authority has fully accepted said item. The acceptance by Port Authority of a coach, system, subsystem, component, part, equipment or other item of Work shall only be after it is received by Port Authority, fully and satisfactorily tested and inspected.

2.22.2 The title transferred to Port Authority shall be good and free and clear of any and all security interest, liens or other encumbrances. The Contractor shall not pledge, hypothecate or otherwise encumber a coach, system, subsystem, component, part, equipment or other item of the Work in any manner that would result in any lien, security interest, charge or claim upon or against any such item under the Uniform Commercial Code or any other law that may be applicable.

2.22.3 The placing of a bus in revenue service shall be considered as acceptance of that coach. Port Authority will notify the manufacturer in writing, within 15 days after delivery, if the bus has or has not been accepted. A letter of non-acceptance will furnish details of any deficiencies.

2.22.4 Acceptance of a bus or other item of Work shall not release the Contractor from liability for faulty workmanship or materials appearing, even after final payment has been made. Port Authority reserves the right, and shall be at liberty, to inspect all materials and workmanship which do not conform with the Contract Documents; however, Port Authority is under no duty to make such inspection, and if no such inspection is made, the Contractor shall not be relieved of any obligation to furnish materials and workmanship strictly in accordance with the Contract Documents.

2.23 INTEREST OF MEMBERS OF, OR DELEGATES TO, CONGRESS

2.23.1 No member of, or delegate to, the Congress of the United States shall be admitted to a share or part of this Contract or to any benefit arising therefrom.

2.24 CIVIL RIGHTS REQUIREMENTS

The following requirements apply to the Contract:

2.24.1 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.

2.24.2 Equal Employment Opportunity - The following equal employment opportunity requirements apply to the Contract:

1) 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 the Contract. 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.

2) 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.

3) Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it shall 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.

2.24.3 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.

2.24.4 In connection with the performance under this Contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, age, creed, sex, or national origin and shall comply with the Commonwealth of Pennsylvania Nondiscrimination Clause set forth below:

1) The Contractor shall not discriminate against any employee, applicant for employment, independent contractor or any other person because of race, color, religious creed, ancestry, national origin, age or sex. The Contractor shall take affirmative action to insure that applicants are employed, and that employees or agents are treated during employment, without regard to their race, color, religious creed, ancestry, national origin, age or sex. Such affirmative action shall include, but is not limited to, employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training. The Contractor shall post in conspicuous places, available to employees, agents, applicants for employment and other persons, a notice to be provided by the Port Authority setting forth the provisions of this nondiscrimination clause.

2) The Contractor shall in advertisement or requests for employment placed by it or on its behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, religious creed, ancestry, national origin, age, or sex.

3) The Contractor shall send each labor union or worker's representative with which it has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or workers' representative of its commitment to this nondiscrimination clause. Similar notice shall be sent to every other source of recruitment regularly utilized by the Contractor.

4) It shall be no defense to a finding of noncompliance with this nondiscrimination clause that the Contractor had delegated some of its employment practices to any union, training program or other source of recruitment which prevents it from meeting its obligations. However, if the evidence indicates that the Contractor was not on notice of the third party discrimination or made a good faith effort to correct it, such factor shall be considered in mitigation in determining appropriate sanctions.

5) Where the practices of a union or of any training program or other source of recruitment will result in the exclusion of minority group persons, so that the Contractor will be unable to meet its obligations under this nondiscrimination clause, the Contractor shall then employ and fill vacancies through other nondiscriminatory employment procedures.

2.13 REPRESENTATIONS OF PROPOSER/CONTRACTOR

2.13.1 Each Proposer, and the Contractor, agree and represent that:

1) The Proposer and the Contractor shall save harmless and fully indemnify Port Authority and all its officers, agents and employees from all damage, costs or expense that may at any time be imposed or claimed for infringement of any patent right of any person, association or corporation as a result of the use by Port Authority or any of its officers, agents or employees, of articles supplied under the Contract and of which the Contractor is not the patentee, assignee or licensee.

2) The Proposer has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competition in connection with the Proposal or the Contract.

3) No Board member, officer or employee of Port Authority engaged in or responsible for the development of the specification or the award or administration of the Contract for which the Proposal is made, nor any member of the immediate family of any such Port Authority Board member, officer or employee has any interest, direct or indirect, in the Contract or the proceeds thereof.

4) No Board member, officer, or employee of Port Authority or of a local public body, during his or her tenure or for one year thereafter, shall have any interest, direct or indirect, in the Contract or the proceeds thereof.

5) Board members, officers, employees and agents of Port Authority have neither solicited nor accepted gratuities, favors or anything of monetary value from the Proposer, potential Proposers, the Contractor or parties to subagreements.

6) The Proposer/Contractor shall comply with all applicable Federal, state and local laws, regulations, policies and related administrative practices presently in effect, as well as any changes to these laws, regulations, policies and practices which may become effective during the period of the Contract.

7) Each Proposer and the Contractor acknowledge and agree that notwithstanding any concurrence by the Federal government, the Commonwealth of Pennsylvania and/or the County of Allegheny, in or approval of the solicitation or the award, if any, of the Contract, absent the express written consent of the Federal government, the Commonwealth of Pennsylvania and the County of Allegheny, respectively, the Federal government, the Commonwealth of Pennsylvania and the County of Allegheny, respectively, is not a party to the Contract and shall not be subject to any obligations or liabilities to the Proposer or the Contractor or any other party pertaining to any matter resulting from the Contract.

8) The Proposer and the Contractor acknowledge 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 the Work. Upon execution of the Contract, the Contractor certifies and affirms the truthfulness and accuracy of any statement it has made, it makes, it may make or causes to be made pertaining to the Work and/or the Contract. In addition to other penalties that may be applicable, the Contractor also 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, as amended, on the Contractor to the extent the Federal government deems appropriate.

9) 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 the Work and/or the Contract 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 Federal 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.

2.14 BUY AMERICA PROVISION

2.14.1 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. 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 not subject to a general waiver must be manufactured in the United States and have a 60 percent domestic content.

2.14.2 The Contractor shall submit the following certifications:

a. Evidence that it will be capable of meeting the specifications; and

b. The manufacturer's Federal Motor Vehicle Safety Standards (FMVSS) self-certification sticker information that the vehicle complies with the relevant FMVSS, or the manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

2.14.3 The Contractor agrees to cooperate fully with Port Authority in the timely performance of both a pre-award audit and a post-delivery audit by Port Authority or its representative to ensure that the proposed vehicles fully comply with the applicable Buy America requirements.

2.15 CERTIFICATION REQUIREMENTS

2.15.1 Each Proposer and the Contractor shall provide all required certifications as described in the RFP.

2.16 COMMUNICATIONS

2.16.1 Communications in connection with this Contract shall be in writing and shall be delivered personally; or by email; or by regular, registered, or certified mail, or courier addressed to the officer(s) or employee(s) of the Port Authority and of the Contractor designated to receive such communications. Telephone calls may be used to expedite communications but shall not be official communication unless confirmed in writing. Communications shall be considered received at the time actually received by the addressee or designated agent.

2.17 DEFINITION OF "APPROVED EQUAL"

2.17.1 Wherever a material, product or service is defined in the Contract Documents by using a trade name and/or the brand name and catalog number of a manufacturer or vendor, the term "APPROVED EQUAL," if not inserted therewith, shall be implied. It is understood that any reference to a particular manufacturer's product, either by trade/brand name or description, has been made solely for the purpose of more clearly indicating the standard required. The term "APPROVED EQUAL" is used as a means of defining the performance or other salient requirements of this procurement. Port Authority, at its sole discretion, shall determine if the proposed material, product, or service meets the standard required.

2.18 NO SUBLETTING OR ASSIGNMENT

2.18.1 The Contract may not be assigned, sublet or transferred by the Contractor without the prior written consent of Port Authority. Port Authority specifically reserves the right to assign part or all of the base or option buses to any other public transportation agency or governmental entity without the consent of the Contractor.

2.19 STANDARD WARRANTIES

2.19.1 In addition to the other warranties set forth in the Contract Documents, the Contractor warrants, affirmatively represents and covenants as follows:

1) The Contractor shall use its best efforts in performing the Work.

2) The buses, all material, systems, subsystems, components, parts, equipment, spare parts, documents and other items furnished pursuant to the Contract Documents shall be, and shall perform, in accordance with the requirements of the Contract Documents.

3) Title conveyed under the provisions of the Contract Documents shall be good and rightful and all buses, materials, systems, subsystems, components, parts, equipment, spare parts, documents and other items delivered or returned to Port Authority shall be free of all security interests or other liens or encumbrances whatsoever.

4) The buses, materials, systems, subsystems, components, parts, equipment, spare parts and other items furnished pursuant to the Contract Documents shall be free from defective and inferior materials, equipment and workmanship and shall be suitable for their intended purpose.

5) All software licenses and other software functions, including any required customization, shall meet the requirements of the Contract Documents and shall be consistent with any written or oral representations or warranties of the Contractor.

6) The Contractor shall deliver to Port Authority all of the software required to operate the buses and other portions of the Work and none of the software or Port Authority's use thereof shall infringe any intellectual property rights or other rights of any third party.

coach will then be presented to Port Authority for evaluation in accordance with the Contract Documents and must meet all requirements of the Contract Documents. Port Authority will, in its sole discretion, make the final determination as to whether the pre-production sample coach and all systems, sub-systems, components and configuration, meet the requirements of the Contract Documents. A "Configuration Audit" will be performed by Port Authority or its representative using, at least in part, the Configuration Audit Sheets (Appendix A) attached to the Contract Documents, which will be utilized as a guide to determine if a sample coach meets the requirements of the Contract Documents.

Liquidated damages in the amount of $500.00 per calendar day shall be imposed if each pre-production sample coach is not completed by the specified date on the Schedule as agreed to by the Contractor and Port Authority.

Production of the other coaches required to be delivered by the Contract Document shall not commence until Port Authority has notified Contractor that the pre-production sample coach has passed the Configuration Audit. This includes frames, shells, and major or minor components, including manufacturer-provided or supplier-provided parts. If production coaches commence before Port Authority has notified the Contractor that the pre-production sample coach has been approved, these coaches MAY NOT be accepted under this Contract or any subsequent contract. When approved by Port Authority, the pre-production sample coach may be counted as the first coach of the order. Before production begins, sufficient time should be allowed to make engineering design changes and order necessary components and parts. Major component suppliers must review the prototype for installation and operation of their respective equipment. They must give written approval that their equipment is installed and operating correctly prior to production of the remaining coaches in the Contract.

For the purposes of this section, major component suppliers shall be defined as (including but not limited to); engine, transmission, rear axle, A/C, destination sign, multiplex, etc.

Port Authority reserves the right to modify or waive the requirements for the pre-production sample coach.

2.9.6 Port Authority will have tires shipped within the continental United States to the manufacturer for installation on the buses. The Contractor shall provide Port Authority with a credit for the wear and tear on the tires provided by Port Authority based upon the total miles traveled, for each bus, from the shipping point of the bus to the delivery to Port Authority's designated facility, which shall be based upon the then rate per mile paid by Port Authority under its applicable tire lease or agreement.

2.9.7 Adequate documents for securing title shall be provided to Port Authority thirty (30) days prior to delivery of each coach to Port Authority. Such documents shall meet the requirements of the Pennsylvania Bureau of Motor Vehicles.

2.9.8 In the event a bus or other item is not delivered to Port Authority, or the Work or portion thereof is not completed, within the time frame set forth in the Schedule, damage will be sustained by Port Authority. In such event, the Contractor shall pay to Port Authority, as liquidated damages and not as a penalty, the sum of Five Hundred Dollars ($500) per coach for each day beyond the date agreed upon until the delivery of the bus or other item. The Contractor shall pay the referenced sum as fixed, agreed to, and liquidated damages and not by way of a penalty, to Port Authority and Port Authority may deduct the sum of the liquidated damages from any monies due or that become due the Contractor under the Contract or any other contract with Port Authority, or if the monies are insufficient, the Contractor or its surety shall pay to Port Authority any deficiencies in such money within thirty (30) days of written notice by Port Authority. The remedies provided herein are not exclusive and are in addition to any other rights and remedies provided by law or under the Contract Documents to Port Authority.

2.9.9 Time is of the essence.

2.10 PAYMENT/CONTRACT SUM

2.10.1 In full and complete payment for the Work, Port Authority will pay the Contractor the Contract Sum, which shall be a not-to-exceed amount, as set forth in the Agreement.

2.10.2 Unless otherwise expressly provided in the Contract Documents, the following payment schedule shall apply to this Contract for the buses:

1) Payment for the first coach of each type of bus delivered and accepted by Port Authority will be made when Port Authority is provided with all preliminary submittals required in Section 5.5 of the Contract Documents. Payment will be made within thirty (30) days after acceptance by Port Authority and the receipt of an invoice.

2) Payment equivalent to the last delivered coach of each type of bus will not be made until it is accepted by Port Authority, all provisions of the Contract Documents have been met, including delivery of the prescribed number of manuals and complete parts lists, as listed in Section 5.5, spare parts packages and completion of the required training sessions. Payment will be made within thirty (30) days after the delivery of all such items, acceptance by Port Authority and the receipt of an invoice.

3) Payment for all other coaches received under the Contract will be made after each coach and submittals are accepted by Port Authority. Payment will be made within thirty (30) days after acceptance by Port Authority and receipt of an invoice.

2.10.3 Payment for training required by the Contract Documents will be made by Port Authority within thirty (30) days after each phase of training has been satisfactorily completed and accepted by Port Authority and Port Authority has received an invoice for the training. Training shall be invoiced in accordance with the three (3) phases of Training as outlined in Section **Error! Reference source not found.**.

2.10.4 Payment for all spare parts and/or major component packages will be made by Port Authority within thirty (30) days after delivery by the Contractor and acceptance by Port Authority and receipt by Port Authority of an invoice for said items.

2.10.5 Payment for all other items of Work will be made by Port Authority within thirty (30) days after delivery by the Contractor and acceptance by Port Authority and receipt by Port Authority of an invoice for said items.

2.11 CHANGES

2.11.1 Port Authority may, at any time, without invalidating the Contract, and without notice to any surety, by written order designated or indicated to be a Change Order, make changes to the requirements of the Contract Documents, including, but not limited to, changes to:

1) The terms and requirements of the Contract Documents;
2) The method or manner of performance of the Work;
3) In the Port Authority furnished equipment, materials or services;
4) Directing acceleration in the performance of the Work;
5) Eliminating any portion of the Work no longer required by Port Authority; and
6) Increasing or decreasing the quantities of the Work.

2.11.2 Except as herein provided, no order, statement or conduct of Port Authority shall be treated as a change under this Section or entitle the Contractor to any equitable adjustment hereunder.

2.11.3 If any changes under this Section causes an increase or decrease in the Contractor's costs of, or the time required for performance of any part of the Work, an equitable adjustment will be made and the Contract accordingly modified in writing. However, no allowance shall be made or required for the loss of anticipated profit or overhead recovery on any portion of the Work not performed by reason of a change in the Work.

2.12 PROPOSER'S RESPONSIBILITY

2.12.1 Each Proposer shall become familiar with the forms, Advertisement, instructions, specifications, drawings, bonds, Agreement and other documents making up the RFP (the "Proposal Documents,") as each Proposer will be held responsible to fully comply therewith. By submitting a Proposal, the Proposer acknowledges that it has carefully examined the Proposal Documents and satisfied itself to all elements of the Work.

2.12.2 The proposal form shall be completely filled in for the item(s) on which the Proposer is submitting a quotation.

2.12.3 Execution of Proposal:

1) SOLE PROPRIETOR: If the Proposer is an individual or sole proprietor, the Proposal must be executed with a handwritten signature by the owner. In the event that the Proposal is signed by a person other than the owner, then **the Proposal must contain supporting documentation**, satisfactory as to form and substance to Port Authority, authorizing said person to bind the Proposer in contractual matters (such as a properly executed Power of Attorney).

2) PARTNERSHIP: If the Proposer is a general, limited or other partnership, the Proposal must be executed with a handwritten signature by a general partner of that partnership. In the event that the Proposal is signed by a person other than a general partner, then **the Proposal must contain supporting documentation**, satisfactory as to form and substance to Port Authority, authorizing said person to bind the partnership in contractual matters.

3) JOINT VENTURE: If the Proposer is a joint venture, the Proposal must be executed with a handwritten signature by each member or, in lieu thereof, by a member of the joint venture expressly designated as the authorized signatory on behalf of all the joint venturers as evidenced by supporting documentation **which must be submitted with the Proposal** and satisfactory as to form and substance to Port Authority.

4) CORPORATION: If the Proposer is a corporation or business trust, the Proposal must be executed with a handwritten signature by either the president, vice president, secretary, assistant secretary, treasurer or assistant treasurer of the corporation or business trust. In the event that the Proposal is signed by a person other than the aforementioned officers, then **the Proposal must contain supporting documentation**, satisfactory as to form and substance to Port Authority, authorizing said person to bind the corporation or business trust in contractual matters (such as a copy of the resolution adopted by the Board of Directors and certified to by the secretary or assistant secretary of the corporation or business trust).

"Contract Sum" – the total amount which Port Authority agrees to pay the Contractor, and the Contractor agrees to accept from Port Authority as fully payment for the Work and as a complete discharge of Port Authority's liability to make payments to the Contractor for the Contractor's proper, timely and satisfactory completion and performance of the Work, which sum is set forth in the Agreement, subject to additions and deductions as provided in the Contract Documents.

"Contractor" – the individual, firm, partnership, corporation, joint venture or any combination thereof, who, as an independent contractor, has entered into the Agreement with Port Authority.

"DBE" – Disadvantaged Business Enterprise as defined in 49 C.F.R., Part 26.

"FTA" – the Federal Transit Administration, United States Department of Transportation.

"Notice to Proceed" – A written notice from Port Authority to the Contractor directing the Contractor to proceed with the Work.

"Port Authority" – Port Authority of Allegheny County, 345 Sixth Avenue, Third Floor, Pittsburgh, Pennsylvania 15222-2527, acting by and through its authorized representatives.

"Proposal" – a written submission, in response to the RFP, by a Proposer, properly signed, dated and completed.

"Proposer" – an individual, firm, partnership, corporation, joint venture or other entity which submits a Proposal to Port Authority, in response to the RFP, seeking to be selected as the Contractor.

"RFP" – the Request for Proposal No. 4000.

"Surety" – a corporate body which is bound with and to the Contractor for the satisfactory performance of the Work by the Contractor.

"Work" – all designs, engineering, manufacturing, deliveries, operations, systems, materials, equipment and labor necessary to properly, timely and to the satisfaction of Port Authority provide and supply the buses, spare parts, special tools and equipment, training and all other items of work indicated or referenced in the Contract Documents, including all alterations, amendments or extension thereto made by change order, and the completion of all required tests and all necessary repairs and modifications resulting from such tests and any warranties as required by the Contract Documents.

2.3 AWARD OF AGREEMENT

2.3.1 Port Authority, in its sole discretion, reserves the right to reject any and all Proposals and to waive informalities and minor irregularities in any Proposal, other provisions in the Contract Document notwithstanding.

2.3.2 The Agreement shall not be in effect until approved by Port Authority's Board and fully executed.

2.3.3 Port Authority reserves the right to cancel the Award of the Agreement before the issuance of the Notice to Proceed when Port Authority deems such cancellation to be in its best interest. In no event will Port Authority be liable, in any way, for cancellation of the Award or any expenses, costs or damages resulting therefrom. The Contractor assumes sole risk and responsibility for any expenses or costs it incurs prior to the issuance of the Notice to Proceed and shall not commence the Work until receipt of the Notice to Proceed.

2.4 EXECUTION OF CONTRACT

2.4.1. Within twenty (20) days after the Contract has been awarded, the successful Proposer shall deliver to Port Authority a properly executed Contract, in duplicate.

2.5 PERFORMANCE GUARANTEE/BOND

2.5.1 Within twenty (20) days after the Contract has been awarded, the Contractor shall deliver to Port Authority a properly executed performance bond (Exhibit "14") or a cashier's check or certified check or irrevocable letter of credit in the amount of at least fifty percent (50%) of the Contract Sum as security for faithful performance of the Contract.

2.5.2 The performance bond shall be on the form provided by Port Authority and shall be executed by such sureties licensed to transact business in the Commonwealth of Pennsylvania and named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as currently authorized under 31 CFR, Part 223 as possessing a Certificate of Authority as described thereunder.

2.5.3 Provision of the performance bond shall not limit, in any manner, any liability of the Contractor to Port Authority.

2.5.4 All alterations, extensions of time, extra and additional work, and other changes to the Contract may be made without securing the consent of the surety on the performance bond. Such changes shall not, however, alter the surety's responsibility relating to the performance bond.

2.5.5 If any surety upon any bond furnished in connection with this Contract becomes unacceptable to Port Authority, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of Port Authority in the prosecution of the Work and the performance of the Contract.

2.6 CONTRACT DOCUMENTS

2.6.1 In case of any conflict among the Contract Documents, where the parties' intended resolution is not clear, the order of precedence shall be:

First – Addendum issued by Port Authority
Second – Part 6, Supplemental Technical Specifications
Third - Part 5, Technical Specifications
Fourth - Parts 2, 3, and 4 of this document
Fifth – the Contractor's Best and Final Offer
Sixth – Other Contract Documents

2.7 TAXES

2.7.1 Port Authority is exempt from certain Federal Excise Tax and Pennsylvania Sales Tax. As appropriate, exemption certificates will be submitted upon request to the Contractor.

2.8 SALE OF BUSES/OTHER ITEMS

2.8.1 The Contractor agrees to and shall provide, sell, transfer and deliver to Port Authority the following:

1) Twenty-eight (28) new 40 foot low floor and/or twenty-five (25) new 60 foot low floor articulated transit buses as set forth in the Contract Documents .

2) Each bus shall include the systems and meet the requirements set forth in the Contract Documents.

3) All other items identified or specified in the Contract Documents.

2.8.2 In addition to the other requirements of the Contract Documents, the following items shall be furnished to Port Authority by the Contractor upon the delivery of each bus:

1) All warranty verification vouchers, certificates or coupons;
2) Operator's Manual for the bus and all systems and equipment;
3) Drawings showing wiring of auxiliary circuits and/or modification of standard vehicle wiring which would not be included in the standard vehicle maintenance manual;
4) Completely filled fuel tank(s);
5) Complete vehicle maintenance and parts manuals;
6) Assurance of compliance with the Contractor's pre-delivery service;
7) Any maintenance and inspection schedules for the basic vehicle and its subsystems and add-on equipment; and
8) All required documents, completely executed by the Contractor.

2.9 SCHEDULES/DELIVERY

2.9.1 Within three (3) days of the Notice to Proceed, the Contractor shall provide Port Authority with a proposed delivery schedule for the buses and other items of Work, which schedule shall be subject to the approval of Port Authority (the "Schedule"). The Schedule shall include, at a minimum, dates for design review(s), approval cycle, first article tests, pre-production and production units, testing, training, spare parts and manual delivery, delivery of the buses and other items and warranty periods. The Contractor shall identify the critical path on the Schedule.

2.9.2 Delivery of each bus and other items of Work shall be made in accordance with the Contract Documents and by the date specified in the Schedule. All buses and other items of Work shall, however, be delivered as soon as possible, but by no later than January 1, 2012.

2.9.3 All buses and other items of Work shall be delivered by the Contractor to Port Authority, FOB destination, between the hours of 7:00 a.m. and 2:00 p.m., Monday through Friday, excluding all Port Authority holidays, at a rate of not more than three (3) buses per day. Delivery shall be made to the following location:

Port Authority of Allegheny County
Main Overhaul Shop
Island and Preble Avenues
Pittsburgh, Pennsylvania 15233

Delivery of the buses and other items shall be strictly in accordance with the requirements of the Contract Documents

2.9.4 In the event that any item shipped by the Contractor is not received by Port Authority as required, the Contractor shall be responsible for immediately replacing said item in like quantity.

2.9.5 Pre-Production Coach:

The Contractor shall build one pre-production sample coach for each type of bus as soon as practicable after the receipt of the Notice to Proceed. Major component suppliers must give approval in writing that they understand and approved the intended installation and use of their respective equipment. [1]Each sample coach must be delivered to Port Authority a minimum of 180 calendar days prior to the beginning of serial production. Sufficient time shall be allotted for Port Authority to review the sample coach for a period no less than 30 days, with sufficient time remaining for any and all changes to be primarily incorporated into the serial production process. Each pre-production sample

RFP NO. 4000

EXHIBIT 15

MOTOR VEHICLES SAFETY AND POLLUTION STANDARDS CERTIFICATION
(PROPOSAL SUBMISSION)

Proposer hereby certifies that the equipment it proposes to furnish under this RFP, meets the governing Motor Vehicles Safety and Pollution Standards as set forth in the specification for this equipment, and which are part of the Contract Documents.

Proposer further certifies that:

1) The horsepower of each vehicle is adequate for the speed, range and terrain in which it will be required and also to meet the demands of all auxiliary power equipment.

2) The motor vehicles comply with all Federal government, the Commonwealth of Pennsylvania and the County of Allegheny motor vehicle exhaust emission standards.

3) The motor vehicles comply with the motor vehicle safety standards established by the Federal Department of Transportation.

4) The motor vehicles comply with the noise level standards established by the Federal government, the Commonwealth of Pennsylvania and the County of Allegheny.

Proposer understands that following receipt of the vehicles by Port Authority, a second certification will be required from the Contractor, indicating that the vehicles, as delivered, fully comply with relevant Federal Motor Vehicle Safety and Pollution Standards.

New Flyer of America Inc.
Proposer - Company Name

Paul Smith - E.V.P., Sales & Marketing
Authorized Representative - Signature and Title

RFP NO. 4000

EXHIBIT 16

MOTOR VEHICLES SAFETY AND POLLUTION STANDARDS CERTIFICATION
(Post Delivery)

Contractor hereby certifies that the equipment delivered under this Contract, meets the governing Motor Vehicles Safety and Pollution Standards as set forth in the Contract Documents for this equipment, and which are part of the Contract Documents.

Contractor further certifies that:

1) The horsepower of each vehicle is adequate for the speed, range and terrain in which it will be required and also to meet the demands of all auxiliary power equipment.

2) The motor vehicles comply with all federal government, the Commonwealth of Pennsylvania and the County of Allegheny motor vehicle exhaust emission standards.

3) The motor vehicles comply with the motor vehicle safety standards established by the Federal Department of Transportation.

4) The motor vehicles comply with the noise level standards established by the federal government, the Commonwealth of Pennsylvania and the County of Allegheny.

Contractor - Company Name

Authorized Representative - Signature and Title

THIS IS A REQUIRED POST DELIVERY DOCUMENT.
THIS FORM MUST BE SUBMITTED AFTER DELIVERY AND ACCEPTANCE OF THE LAST VEHICLE OF EACH TYPE OF COACH.

2 CONTRACT CONDITIONS AND INSTRUCTIONS TO PROPOSERS

(f) - Referenced on Agreement Page 2 of 6

2.1 INTRODUCTION

2.1.1 The RFP, each Proposer and the Contractor are subject to the following conditions and instructions, all interpretations of which shall be at the sole discretion of Port Authority.

2.1.2 The enumeration in these conditions and instructions of certain rights and remedies of Port Authority shall not be construed to preclude the exercise by Port Authority of other and additional rights and remedies which are available generally at law or which may be implied from the foregoing.

2.2 DEFINITIONS

"**Acceptance**" – formal written acceptance by Port Authority that the Work, or a portion thereof, has been completed according to the specifications and requirements of the Contract Document.

"**Addendum**" – an amendment made by Port Authority, in writing, to the RFP.

"**Advertisement**" – the public announcement requesting Proposals for the Contract.

"**Agreement**" – the written agreement to be executed by Port Authority and the Contractor for the acquisition.

"**Approved**" – the endorsement, sanction or authorization by Port Authority of a proposal, plan, procedure, action, document, report, specification, design, or any parts thereof, undertaken, promulgated, or developed by the Contractor in accordance with the requirements of the Contract Documents.

"**Award**" – the acceptance by Port Authority of a Proposal for award of the Agreement.

"**Bond**" – the executed Performance Bond required to be supplied by the Contractor pursuant to the Contract Documents

"**Change Order**" – a written order issued by Port Authority to the Contractor, delineating changes in the Contract Documents and establishing the basis of payments and time adjustments, if any, for the portion of the Work affected by the changes.

"**Contract**" – See Agreement.

"**Contract Documents**" – the Advertisement, the RFP, the Agreement, bonds, all contract forms and exhibits, Contract Conditions and Instructions to Proposers, Quality Assurance section, Warranty Provisions, Technical Specifications, Supplemental Technical Specifications, the Appendix, the Notice to Proceed, change orders, and the Proposal, if any, upon which the Contract is awarded.

EXHIBIT 13

PROPOSAL EVALUATION RATING SHEET

PROCUREMENT OF 40 FOOT LOW FLOOR AND/OR 60 FOOT LOW FLOOR ARTICULATED TRANSIT TYPE COACHES

Proposer's Name:____________________________________

Rating Criteria	Weighted Multiplier	Preliminary Rating Score	Preliminary Weighted Score	Final Rating Score	Final Weighted Score
DBE Utilization	2				
Experience Record and Qualifications	17				
Technical Proposal	100				
Organization and Management Plan	14				
Summary of Prices	67				

Total Weighted Score ____________________

Un-Weighted Scoring Range: 0 through 10: 10 as the highest score, 0 as the lowest score

Rating Performed By ____________________ ____________________
Print Name Title

Preliminary Rating ____________________ ____________________
Signature Date

Final Rating ____________________ ____________________
Signature Date

EXHIBIT 13

* Issued in Duplicate *

BOND No. K08252385

PERFORMANCE BOND

(FOR CONTRACTS TOTALING $100,000 AND OVER)

KNOW ALL MEN BY THESE PRESENTS,

That we, NEW FLYER OF AMERICA INC., as PRINCIPAL, and Westchester Fire Insurance Company, as SURETY, are held and firmly bound unto Port Authority of Allegheny County, hereinafter called PORT AUTHORITY, in the sum of NINE MILLION TWO HUNDRED FIFTY-TWO THOUSAND, FIVE HUNDRED FOURTY-NINE AND 00/100 DOLLARS ($9,252,549.00), said sum being at least 50% of the contract price, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract, hereto attached, New Flyer of America, Inc.-BOND- with Port Authority, dated August 25, 2010, for:

CONTRACT NO. RFP 4000-02 60 Foot Low Floor Transit Buses

NOW, THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by Port Authority, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, then Principal and Surety shall have no further obligation to Port Authority under the contract, otherwise this obligation shall remain in full force and effect.

IN WITNESS WHEREOF, the above bound parties have executed this instrument this 30th day of August, 2010, the name of each corporate party being hereto affixed and these presents duly signed by its undersigned representatives, pursuant to authority of its governing body.

BOND No. K08252385

PRINCIPAL

(IF A SOLE PROPRIETOR)

____
(Name of Company)

____
(Handwritten Signature of Owner)

____
(Name of Owner - TYPED)

(IF A PARTNERSHIP)

____
(Name of Company)

____
(Handwritten Signature of Owner)

____
(Name of Owner - TYPED)

(IF A CORPORATION)

New Flyer of America, Inc.
(Name of Corporation)

711 Kernaghan Avenue
Winnipeg, Manitoba R2C 3T4 CANADA

by ____________________
(Handwritten Signature)

Mr. Glenn Asham, CFO
(Name and Title - TYPED)

SURETY

WITNESS:

____
(Handwritten Signature)

Margaret Weglicka, Associate Account Manger
(Title)

Westchester Fire Insurance Company
(Corporate Surety Company Name)

1133 Avenue of the Americas, New York, NY
(Business Address)

by ____________________
(Handwritten Signature)

J.M. Takeuchi, Attorney-In-Fact
(Name and Title - TYPED)

Revised 12/2003

Power of Attorney

WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the State of New York, having its principal office in the City of Atlanta, Georgia pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

FURTHER RESOLVED, that the Resolution of the Board of Directors of the Company adopted at the meeting held on November 8, 1999 relating to the authorization of certain persons to execute, for and on behalf of the Company, Written Commitments and appointments and delegations, is hereby rescinded.

Does hereby nominate, constitute and appoint C Holmes, David Bowcott, G.W. Russ, J.M. Takeuchi, all of the City of TORONTO, Ontario, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Ten million dollars & zero cents ($10,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 18 day of June 2009.

WESTCHESTER FIRE INSURANCE COMPANY

Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA ss.

On this 18 day of June, AD. 2009 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
KAREN E. BRANDT, Notary Public
City of Philadelphia, Phila. County
My Commission Expires September 26, 2010

Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 22 day of September, 2010.

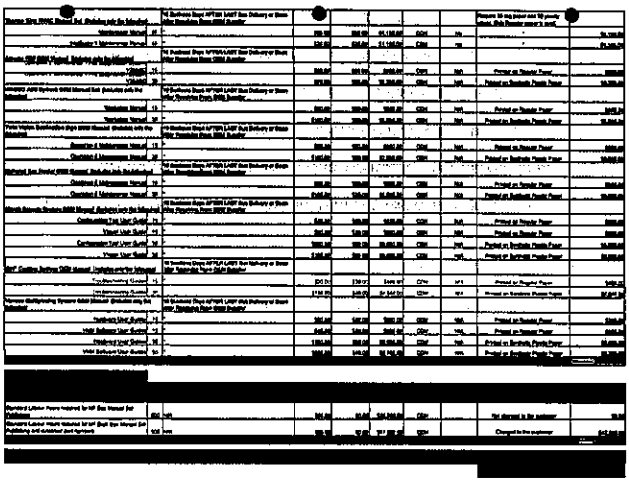
William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER June 18, 2011.

FORM NO. 8800S

EXHIBIT #14

THE BACK OF THIS DOCUMENT LISTS VARIOUS SECURITY FEATURES THAT WILL PROTECT AGAINST COPY COUNTERFEIT AND ALTERATION.



354

EXHIBIT #12
BAFO

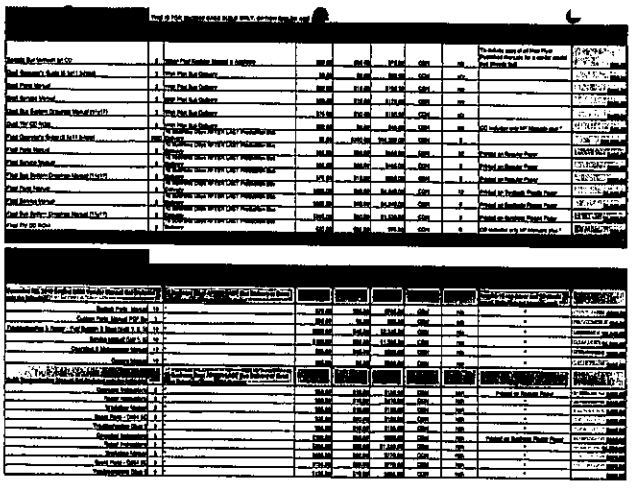
NEW FLYER

60' Bus Manuals

New Flyer's suggested reduction in manual quantities, amortized over 25 x 60' Buses.

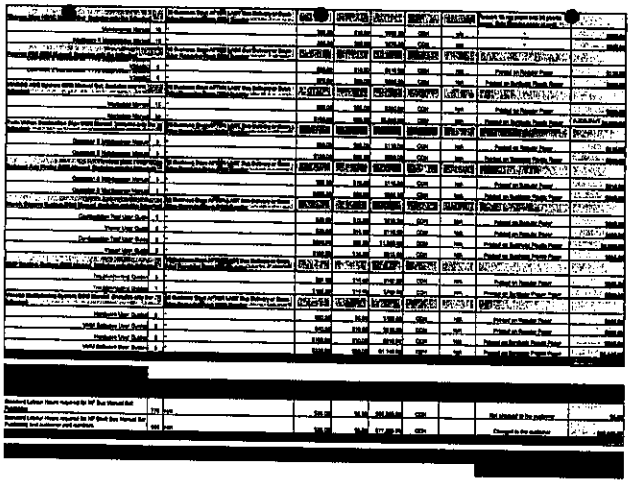
395

EXHIBIT #12
BAFO



396

EXHIBIT #12
BAFO



397

EXHIBIT #12
BAFO

PROPOSER: NEW FLYER OF AMERICA, INC

B3.12 Unit Price per each Complete Stop Announcement System
($ 19,327.00) times (3) qty = $ 57,981.00

[3]B3.13 Unit Price per each Radiator Fan Cooling System
($ See B3.3) times (3) qty = $ See 3.3 (above)
Duplication of same spare.

B4 Lump Sum Cost of Special Tools and Diagnostic Equipment
For 60 Foot coaches. = $ 1,666,920.00

B5 Cost of Optional Extended Warranties for 60 Foot Coaches
(as listed in Section 4.1.3 (Warranty Provision))
($ 2,476.00) times 25 Coaches. = $ 61,900.00

B6 Hybrid Drive Alternative. [1]
Unit Incremental Cost difference over the 60ft bus price
listed in B1 above. ($ 244,819.00) time 25 Coaches. = $ 6,120,475.00

B7 BRT Styling Alternative [1]
Unit Incremental Cost difference over the 60ft bus price
listed in B1 above. ($12,249.00) time 25 Coaches. = $ 306,225.00
NOTE: BRT Pricing includes Flush Windows

B8 Frameless Passenger Window Alternate [1]
Unit Incremental Cost difference over the 40ft bus price
listed in A1 above. ($ 3,343.00) time 25 Coaches. = $ 83,575.00

B9 Non-Electrical Radiator Cooling fan system Alternate [1]
Unit Incremental Cost difference over the 40ft bus price
listed in A1 above. ($ -5,500.00 time 25 Coaches = $ -137,500.00

TOTAL PRICE for 60 Foot Articulated Diesel Coaches not including Optional Extended Warranties (Sum of Items B1, through B4) = $ 19,590,091.00

TOTAL PRICE for 60 Foot Articulated Diesel Coaches including Optional Extended Warranties (Sum of Items B1 through B5) = $ 19,651,991.00

RFP NO. 4000

EXHIBIT 12

FORM FOR COST REDUCTION OPPORTUNITIES

The following form shall be completed for each item for consideration that will result in a cost reduction for the equipment or items covered within the Contract Documents. Items should be of the type that would result in a reduced cost while maintaining the required level of quality without reducing the functionality or reliability of the coaches being proposed. Care should be taken to include the effect on ancillary items such as warranty and special tools.

RFP# 4000 Proposer: New Flyer of America Inc.

Opportunity # 1 Brief Description Publications

Complete Description of Opportunity

The base specifications request an extensive amount of manuals for both 40' and 60' buses. These manuals are amortized over a very small quantity of buses (28 x 40') and (25 x 60' buses). We have quoted to your specification requirements for manuals, and would like to propose an alternate package for your consideration

If the Port Authority were willing to accept a reduced package of manuals, a savings of $4,348.00/bus on the 40' buses and $4,256.00/bus on the 60' buses would be realized.

Please note, the cost of manuals for all subsequent production builds would need to be reviewed and a credit and/or charge applied, depending upon the number of vehicles purchased by The Port Authority.

We have attached a copy of the following for your review:

1) 40' Publications Package – Per Specification
2) 60' Publications Package – Per Specification

3) 40' Publications Package with reduced quantities
4) 60' Publications Package with reduced quantities

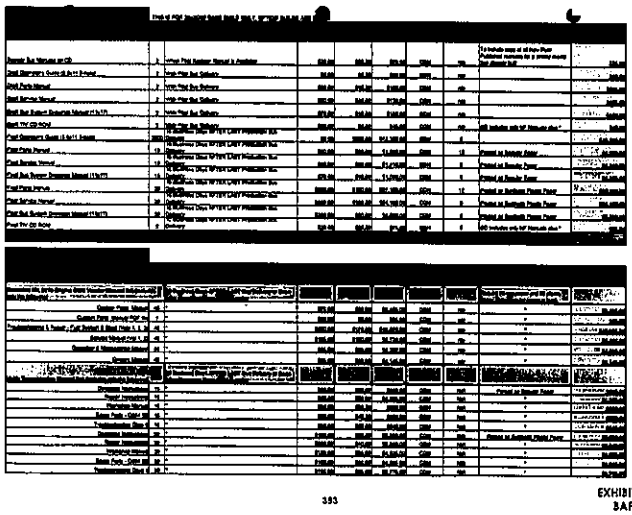
Please refer to the attached documentation.

Proposer may reproduce this form as needed.

NEW FLYER

60' Bus Manuals

Manuals quantities per specification, amortized over 25 x 60' Buses.



Front Destination ___63_____ In.
Front Run Number ___17_____ In.
Side Destination ___44.9_____ In.
Rear Run Number ___17_____ In.

EE. ELECTRICAL

1. Multiplex System
   a. Manufacturer ___Vansco_____
   b. Model No. ___Vansco_____
   c. List all Model Types ___N/A_____

2. Batteries
   a. Manufacturer ___Interstate___
   b. Model No. ___U8D-1400B_____
   c. Type ___Lead Acid_____
   d. Cold Cranking Amps ___1375_____

EXHIBIT #10
(Technical Proposal Worksheet)

RFP NO. 4000

EXHIBIT 11

SUMMARY OF PRICES/PRICING SCHEDULE

Each Proposer shall set forth the following for the buses and equipment on which it is providing a Proposal:

Proposer: New Flyer of America Inc.

A. 40-Foot, low floor Diesel Powered Transit Type Coaches

40-Foot Diesel Powered Transit Type Coaches Model Number XD40

A1 Unit Price per each 40-Foot, low floor coach ($ 434,600.00) times 28 Coaches = $ 12,168,800.00

A2 Lump Sum Cost of Education and Training for 40 Foot coaches per Section 5.4.2 of the Technical Specifications = $ 919,015.00

A3 Lump Sum Cost of Major Components Package for 40 Foot coaches per Section 5.6.3[1] of the Technical Specifications = $ 452,564.00

A3.1 Unit Price per each Complete Engine ($ 41,890.00) times (3) qty = $ 125,670.00

A3.2 Unit Price per each Complete Transmission ($ 17,312.00) times (3) qty = $ 51,936.00

A3.3 Unit Price per each Complete Radiator Assembly ($ 15,894.00) times (3) qty = $ 47,682.00

A3.4 Unit Price per each Engine Emissions Exhaust Aftertreatment System ($ 12,703.00) times (5) qty = $ 63,515.00

A3.5 Unit Price per each A/C Compressor ($ 5,372.00) times (3) qty = $ 16,116.00

A3.6 Unit Price per each Engine Cradle Stand ($ 1,491.00) times (3) qty = $ 4,473.00

A3.7 Unit Price per each Complete Passenger Window Set ($ 8,190.00) times (3) qty = $ 24,570.00

A3.8 Unit Price per each Complete Destination Sign System ($ 6,283.00) times (3) qty = $ 18,849.00

A3.9 Unit Price per each Complete Wheelchair Ramp System ($ 3,634.00) times (2) qty = $ 7,268.00

EXHIBIT #11
SUMMARY OF PRICES/PRICING SCHEDULE

PROPOSER: NEW FLYER OF AMERICA, INC.

A3.10 Unit Price per each Complete Radio System ($ 4,149.00) times (3) qty = $ 12,447.00

A3.11 Unit Price per each Complete Video Surveillance System ($ 9,459.00) times (3) qty = $ 28,377.00

A3.12 Unit Price per each Complete Stop Announcement System ($ 17,221.00) times (3) qty = $ 51,663.00

A3.13 Unit Price per each Radiator Fan Cooling System ($ See A3.3) times (3) qty = $ See A3.3 (above) Duplication of same spare.

A4 Lump Sum Cost of Special Tools and Diagnostic Equipment For 40 Foot coaches. = $ 1,450,685.00 List attached.

A5 Cost of Optional Extended Warranties for 40 Foot coaches (as listed in Section 4.1.3 (Warranty Provisions)) ($ 2,476.00) times 28 Coaches. = $ 69,328.00

A6 Hybrid Drive Alternative.[1] Allison EV40 with Cummins ISB Engine Unit Incremental Cost difference over the 40ft bus price listed in A1 above. ($ 183,216.00) time 28 Coaches = $ 5,127,248.00 $170,927.50/Bus for BAE $ 4,785,956.00

A7 BRT Styling Alternative[1] BAE Hybridrive with Cummins ISB Engine Unit Incremental Cost difference over the 40ft bus price listed in A1 above. ($ 5,928.00) time 28 Coaches = $ 165,984.00 NOTE: BRT Pricing includes Flush Windows

A8 35ft Diesel Bus Alternate[1] Unit Incremental Cost difference over the 40ft bus price listed in A1 above. ($ -4,445.00) time 28 Coaches = $ -124,460.00

A9 Frameless Passenger Window Alternate[1] Unit Incremental Cost difference over the 40ft bus price listed in A1 above. ($ 2,635.00) time 28 Coaches = $ 73,780.00

A10 Non-Electrical Radiator Cooling fan system Alternate[1] Unit Incremental Cost difference over the 40ft bus price listed in A1 above. ($ -5,500.00) time 28 Coaches = $ -154,000.00

TOTAL PRICE for 40 Foot Diesel Coaches not including Optional Extended Warranties (Sum of Items A1 through A4) = $ 14,991,064.00

TOTAL PRICE for 40 Foot Diesel Coaches including Optional Extended Warranties (Sum of Items A1 through A5) = $ 15,060,392.00

EXHIBIT #11

PROPOSER: NEW FLYER OF AMERICA, INC.

B. 60-Foot Articulated Low Floor Diesel Powered Transit Type Coaches

60-Foot articulated Low Floor Diesel Powered Transit Type Coaches Model Number D60LFR

B1 Unit Price per each 60-Foot, articulated low floor coach ($ 659,990.00) times 25 Coaches = $ 16,499,750.00

B2 Lump Sum Cost of Education and Training for 60 Foot Coaches per Section 5.4.2 of the Technical Specifications = $ 936,237.00

B3 Lump Sum Cost of Major Components Package for 60 Foot Coaches per Section 5.6.3[1] of the Technical Specifications = $ 487,184.00

B3.1 Unit Price per each Complete Engine ($ 44,345.00) times (3) qty = $ 133,034.00

B3.2 Unit Price per each Complete Transmission ($ 17,414.00) times (3) qty = $ 52,242.00

B3.3 Unit Price per each Complete Radiator Assembly ($ 15,894.00) times (3) qty = $ 47,682.00

B3.4 Unit Price per each Engine Emissions Exhaust Aftertreatment System ($ 12,703.00) times (5) qty = $ 63,515.00

B3.5 Unit Price per each A/C Compressor ($ 8,419.00) times (3) qty = $ 25,257.00

B3.6 Unit Price per each Engine Cradle Stand ($ 1,491.00) times (3) qty = $ 4,473.00

B3.7 Unit Price per each Complete Passenger Window Set ($ 11,248.00) times (3) qty = $ 33,744.00

B3.8 Unit Price per each Complete Destination Sign System ($ 6,283.00) times (3) qty = $ 18,848.00

B3.9 Unit Price per each Complete Wheelchair Ramp System ($ 3,634.00) times (2) qty = $ 7,268.00

B3.10 Unit Price per each Complete Radio System ($ 4,157.00) times (3) qty = $ 12,471.00

B3.11 Unit Price per each Complete Video Surveillance System ($ 10,222.00) times (3) qty = $ 30,666.00

a. Manufacturer & Model ___Various___

12. Heater Cores
- a. Manufacturer & Model __Thermo King___
- b. Capacity ___210,000_____B.T.U.
- c. Number of Rows ___2_____
- d. Number of Fins/In. ___9_____
- e. Outer Diameter of Tube ___0.375_____In.
- f. Fin Thickness ___0.008_____In.
- g. Number of Heater Cores ___2 (Total)_____

14. Floor Heater Blowers
- a. Heater Blower Motors
  - 1. Manufacturer & Model _Mobil Climate Control_____
  - 2. Horsepower ____0.34_____HP
  - 3. Speed(s) ____3800_____r.p.m.
- b. Heater Blower Wheel
  - .Manufacturer & Model _Mobil Climate Control_____
  - Capacity ____450_____cfm

c. Cores
- .Manufacturer & Model _Mobil Climate Control_____
- Capacity ___48200 x 2_____B.T.U.
- Number of Rows ____2_____
- Number of Fins/In. ____20_____
- Outer Diameter of Tube ____0.375__In.
- Fin Thickness ____0.004__In.
- Number of Heater Cores ____1_____

15. Controls
- a. Manufacturer & Model __TK – Intelligaire III_____
- b. Type ___Microprocessor_____

16. Driver's Heater

- a. Manufacturer __Mobile Climate Control_____
- b. Model No. __12.6096_____
- c. Capacity __840000__B.T.U.

17. Ventilation System
Type _____Forced Air_____

18. Heater Booster Pumps
- a. Manufacturer _____Ametek_____
- b. Model No. _____150289_____
- c. Flow Rate _____18_____GMP

19 Auxiliary Heater
1. Manufacturer & Model No. ____Webasto___350_____
   Capacity _ _120,000_____BTU/hr.

V. INTERIOR LIGHTING
1. Manufacturer / Model _Pretoria _
2. Type __LED ___
3. Number of Fixtures __16____
4. Size of Fixtures _36.13 to 84.25 Inches___
5. Power Pack (Mfg./Model No.) __N/A __

W. DOORS
1. Front
   - a. Manufacturer of Operating Equipment _____Vapor_____
   - b. Type of Door ____Slide Glide_____
   - c. Manufacturer of Door Panels _____Vapor_____

2 Center (artic only)
   - a. Manufacturer of Operating Equipment __Vapor___
   - b. Type of Door _ Slide Glide _____
   - c Manufacturer of Door Panels __Vapor_____

3. Rear
   - a. Manufacturer of Operating Equipment __Vapor ___
   - b. Type of Door _ Slide Glide _____
   - c. Manufacturer of Door Panels __Vapor_____

X. PASSENGER WINDOWS
1. Manufacturer _____Stormtite_____
2. Model _____New Flyer_____
3. Type Top Tip-in Bottom Fixed (Rapid Replacement)
4. Number: (Curb Side) ___17 (including driver's window)_____
   (Street Side) ___N/A_____
5. Sizes: (Curb Side)_____ 43.47 in. x 63.51 In., 43.47 In. x 44.9 In_
   (Street Side) _____43.47 In. x 63.51 In., 43.47 In. x 44.9 In._____
6. Glazing: Type ____Laminated_____
   Thickness _____0.25 _____In
   Color of Tint ____grey_____
   Light Transmission _____28%_____

Y. MIRRORS

	Size Inches	Manufacturer	Mfg. Part #	Model No.
Curb Side Exterior- Remote*	8 X 15	Hadley	TBD	TBD
Street Side Exterior-Manual*	8 X 15	Hadley	TBD	TBD
Center Rearview-Flat	16 X 8.25	Hadley	A1706NF	N/A
Front Entrance	9.5 x 6.5	Hadley	A1709	N/A
Upper-Curb Side Corner	6"dia	Hadley	A1708NF-3	N/A
Rear Exit Area-Convex	12"dia	Hadley	A1712NF	N/A

* non-heated & Upper – Flat, Lower - Convex

Z. SEATS
1. Manufacturer _____American Seating_____
2. Model ____6468_____
3. Type _____Cantilever/Pedestal_____

AA. PAINT
1. Manufacturer __Dupont_____
2. Type __ IMRON® ELITE™ _____

BB. WHEELCHAIR RAMP EQUIPMENT

1. Manufacturer & Model No. __New Flyer_____
2. Type __Flip - out_____
3. Capacity __600_____Lbs.
4. Dimensions
   - Width of Platform __30.5_____In.
   - Length of Platform __44.0_____In.
5. System Fluid Capacity ____1_____Qts.
6. Type Fluid Used ____ATF_____
7. Operating Hydraulic Pressure _1200 – 1400 psi__
8. Hydraulic Cylinders
   - Size _1.5 in x 4 in stroke_
   - Number ____1_____

CC. WHEELCHAIR SECUREMENT EQUIPMENT
1. Manufacturer & Model No. Sure-Lok belt system with A.R.M. System

DD. DESTINATION SIGNS
1. Manufacturer ___Twin Vision_____
2. Type ___Full LED_____
3. Character Length
   - Front Destination _16 rows x 160 columns__
   - Front Run Number _16 rows x 36 columns __
   - Side Destination _14 rows x 108columns __
   - Rear Route _16 rows x 48 columns ___
4. Character Height
   - Front Destination ____7.9_____ In.
   - Front Run Number ____6.1_____ In.
   - Side Destination ____4.7_____ In.
   - Rear Route ____6.1_____ In.
5. Number of Characters
   - Front Destination TBD__ In.
   - Front Run Number TBD__ In.
   - Side Destination TBD_ In.
   - Rear Run Number TBD__ In.
6. Message Width

1. Front Take-up 5.1 In.
2. Center Take-up 5.1 In.
3. Rear Take-up 5.1 In.

5. Brake Drums/Discs
   a. Front
      1) Manufacturer M.A.N.
      2) Part Number 81.50110.0231
      3) Diameter 16.14 In.
   b. Center (artic only)
      1) Manufacturer MAN
      2) Part Number 81.50110.0144
      3) Diameter 16.14 In.
   c. Rear
      1) Manufacturer M.A.N.
      2) Part Number 81.50110.0144
      3) Diameter 16.14 In.

6. Brake Lining Manufacturer (Pad) Berol
   Type 1616

7. Brake Lining Identification
   a. Front
      1. Forward 19579
      2. Reverse 19580
   b. Center (artic only)
      1 Forward 19581
      2. Reverse 19582

   c. Rear
      1. Forward 19581
      2. Reverse 19582

8. Brake Linings Per shoe
   a. Front 2
   b. Center (artic only) 2
   c Rear 2
9. Brake Lining Widths
   a. Front 8.23 In.
   b. Center (artic only) 8.66 In.
   c. Rear 8.66 In.
10. Brake Lining Lengths
   a. Front 16.14 In.
   b. Center (artic only) 16.14 In.
   c. Rear 16.14 In.
11. Brake Lining Thickness 0.71 In.
12. Brake Lining Area Per Axle
   a. Front 416 Sq. In.
   b. Center (artic only) 573 Sq. In.
   c. Rear 573 Sq. In.

S COOLING SYSTEM

1. Radiator/Charge Air Cooler
   a. Manufacturer EMP/ EMP
   b. Type Aluminum Bar-Plate / Aluminum Bar-Plate
   c. Model Number EXA11087005/ EXA11087008
   d. Number of Tubes 37 rows / 15 rows
   e. Tubes Outer Diameter 0.098 major/n/a
   f. Fins Per Inch 8.5 Fins / 8.5 Fins
   g. Fin Thickness 0.03 In./ 0.03 In.
2. Total cooling and heating System Capacity 23 Gals
3. Radiator Fan Speed Control Electronic

4. Surge Tank, Capacity 20 Qts
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 2000 Cu. In.
2. Primary Reservoir 2000 Cu. In.
3. Secondary Reservoir 2000 Cu. In.
4. Parking Reservoir N/A Cu. In.
5. Accessory Reservoir 2000 Cu. In.
6. Other Reservoir Type 2000 Cu. In.

Y. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT
1. Heating System Capacity 210,000 B.T.U.
2. Air Conditioning Capacity 187,000 B.T.U.
3 Ventilating Capacity 2400 cfm
4. Compressor
   a. Manufacturer & Model Thermo King S616
   b. No. of Cylinders N/A
   c. Drive Ratio 1.42:1
   d. Maximum Warranted Speed 3600 r.p.m.
   e. Operating Speed 3200 r.p.m.
   f. Weight 113 lbs.
   g. Oil Capacity
      1. Dry 78 ounces.
      2. Wet 78 ounces
   h. Refrigerant R407c Type
5. Condenser (2)
   a. Manufacturer & Model Thermoking
   b. Number of Rows 3
   c. Number of Fins/In. 12
   d. O.D. of Tube 0.375 In.

   e. Fin Thickness 0.008 In.
6 Condenser Fan (4)
   a. Manufacturer & Model Thermo King, EBM
   b. Fan Diameter 12 In.
   c. Speed Maximum 3300 RPM
   d. Flow Rate (maximum) 7500 CFM
7. Receiver
   a. Manufacturer & Model Thermo King
   b. Capacity Approx. 4.0 Lbs.
8. Condenser Fan Drive Motors (4)
   a. Manufacturer TK, EBM
   b. Model EBM
   c. Type Brushless
   d. Horse Power 0.3 HP
   e. Operating Speed Variable r.p.m.
9. Evaporator Fan Drive Motors
   a. Manufacturer TK, EBM
   b. Model EBM
   c. Type Brushless
   d. Horse Power 0.75 HP
   e. Operating Speed 0-1550 r.p.m.
10. Evaporator(s)
   a. Manufacturer & Model Thermo King/RLF
   b. Number of Rows TBD
   c. Number of Fins/In. 10
   d. Outer Diameter of Tube 0.375 In.
   e. Fin Thickness 0.008 In.
   f. Number of Evaporator 2
11. Expansion Valve
   a. Manufacturer & Model TK/BBI
12. Filter-Drier

18. Engine information/graphs to be attached to this form:

SEE PERFORMANCE CURVES

a. Engine speed vs. road speed
b. Torque vs. engine speed
c. Horsepower vs. engine speed
d. Fuel consumption vs. engine speed.
e. Vehicle speed vs. time (both loaded and unloaded)
f. Vehicle speed vs. grade (both loaded and unloaded)
g. Acceleration vs. time
h. Change of acceleration vs. time

F TRANSMISSION

1. Manufacturer Voith
2. Type Electronic
3. Model Number Diwa 5 864.5
4. Speeds 6
5. Gear Ratios Forward 5.4:1 to 0.73 Reverse 4.3:1
6. Shift Speeds
   a. 1st - 2nd See Performance Curves mph
   b. 2nd - 3rd See Performance Curves mph
   c. 3rd – 4th See Performance Curves mph
   d. 4th - 5th (if applicable) N/A mph
   e. 5th - 6th (if applicable) N/A mph
7. Fluid Capacity [including heat exchanger and filter(s)] 32 qts
8. Retarder
   a. Type Internal
   b. Capacity 2000 ft-lb

G. VOLTAGE REGULATOR

1. Manufacturer Delco
2. Model 50-VR

H. VOLTAGE EQUALIZER

1. Manufacturer Vanner
2. Model Number 70-100

I. ALTERNATOR

1. Manufacturer EMP
2. Type Air Cooled
3. Model Power 450

4. Output amps at Idle 280 Amps
5. Output amps at maximum speed 455 Amps
6. Maximum warranted speed 8000 rpm
7. Speed at idle 2000 rpm
8. Drive type belt

J. STARTER MOTOR

1. Manufacturer Delco
2. Type 24 VDC
3. Model 42MT

K. 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 at 2100 rpm
6. Maximum Warranted Speed 3000 rpm
7. Speed Idle 750 rpm
8. Drive Type Direct
9. Governor
   a) Cut-In Pressure 105 psi
   b) Cut-Out Pressure 125 psi

O. AXLE, FRONT

1. Manufacturer M.A.N.
2. Type Reverse Elliot cast beam type dropped center, non driven
3. Model Number V8-65L
4. Gross Axle Weight Rating 14,770 lbs.
5. Axle Load 12,506 lbs.

M Axle, Center (Artic. only)

1. Manufacturer MAN

2. Type Center axle (rigid) non driven
3. Model HONG 1100
4. Gross Axle Weight Rating 24,250 lbs.
5. Axle Load 21,846 lbs.

N. AXLE, REAR

1. Manufacturer M.A.N.
2. Type Low Profile Planetary
3. Model Number HP-1352-B
4. Gross Axle Weight Rating 28,660 lbs.
5. Axle Load 27,048 lbs.
6. Axle Ratio 5.44:1

O. SUSPENSION SYSTEM

1. Manufacturer New Flyer
2. Type: Front Pneumatic
   Center (artic) Pneumatic
   Rear Pneumatic
3. Springs: Front Firestone
   Center (artic) Firestone
   Rear Firestone

P WHEELS AND TIRES

1. Wheels
   a. Make Alcoa Durabright
   b. Size 22.5 x 8.25
   c. Capacity 7824 lbs.
   d. Material Aluminum
2. Tires
   a. Manufacturer Customer Supplied
   b. Type Low Profile
   c. Size 305/70R22.5
   d. Load Range/Air Pressure H /pressure depends on tire manufacturer lbs/psi

Q. STEERING, POWER

1. Pump
   a. Manufacturer & Model Parker Hannifin
   b. Type Dual Vane Pump
   c. Relief Pressure 1740 psi
2. Booster/Gear Box
   a. Manufacturer & Model No. Sheppard M110
   b. Type Recirculation ball
   c. Ratio 23:1
3. Power Steering Fluid Capacity 5 gals
4. Maximum Effort at Steering Wheel 40 lbs
   (unloaded stationary coach on dry asphalt pavement)
5. Steering Wheel Diameter 20 in.

R. BRAKES

1. Make of Fundamental Brake System MAN
2. Brake Chambers Vendor's Size & Part No.
   a. Front MGM, MGMMJM 3024
   b. Rear MGM, MGMMJM 3026
3. Brake Operation Effort 70 lbs
4. Slack Adjuster's Vendor's Type & Part No.
   a. Front
      1. Right Haldex 419-79225
      2. Left Haldex 419-79226
   b. Center
      1. Right Haldex 419-79229
      2. Left Haldex 419-79228
   c. Rear
      1. Right Haldex 419-79772
      2. Left Haldex 419-79772
   d. Length

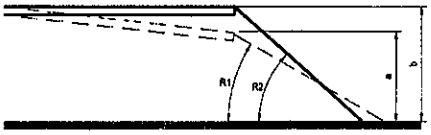
d. Over Tires Center Axle (Artic Only) ___98__in.
e Over Tires Rear Axles ___98_in.

3. Over All Height
   a. Maximum ___123.85___in.
   b. Main roof line ___111.2___in.
4. Angle of Approach ___9.0__Deg.
5. a Breakover Angle Tractor (Artic. only) __12.63___Deg.
   b Breakover Angle Trailer (Artic,.only) __9.59___Deg.
   C Breakover Center __N/A__Deg.
6. Angle of Departure ___9.0__Deg.
7. Articulation Angles (Artic. only) _52____ Deg.
   a. Horizontal Available __0 -52_ Deg.
   b. Horizontal Maximum __52___ Deg.
   c. Vertical Available 6 - 6 ___ Deg.
   d. Vertical Maximum _9____ Deg.

8 Doorway Dimensions

	Front	Center	Rear
a. Width between Door Posts	_40.9__ in	__54.0___in	_54.0__in
b. Door Width Between Panels	_35.0__ In	__45.0____in	_45.0__in
c. Clear Door Width	_32___in	__40.76____in	_40.76__in
d, Doorway Height	__75.18__ in	_75.82__in	_75.82__In
e. Knuckle Clearance	__1.5_ In	___in	_1.5__in__ 1.5___in

8. Step Height from Ground (measured at center of doorway, Empty Bus)



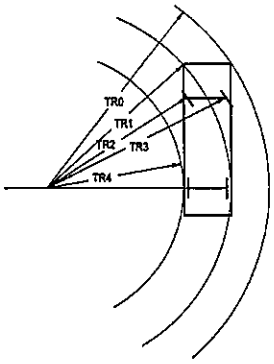
a. Kneeled
Front Doorway _13___In.
Ramp Angle ___14_ deg.
Rear Doorway __17.5___In.

b. Unkneeled
Front Doorway __15___in.
Ramp Angle ____18.___ deg.
Rear Doorway ___17.5____in.

10. Interior Head Room (center of aisle)
    a. Front Axle Location __79_____In.
    b. Drive Axle Location __91_____In.
    c. Lowest Location (Describe) __77_____In. (upper deck)

11. Aisle Width Between Transverse Seats (min. __23.0____In.
12. Floor Height above Ground (centerline of bus)
    a. at Front door __16___In.
    b. at Front Axle __16__in.
    c at Center door (artic only) __17.5___In.
    e at Center Axle (artic only __17.5___In.
    f. Drive Axle __31___In.
    g. Rear door __17.5___In.

13. Minimum Ground Clearance (between bus and ground, bus unkneeled)
    a. Excluding Axles __9.1___In. (at jacking pad)
    b. Including Axles __5.12__In.
14. Horizontal Turning Envelope (see diagram below)
    a. Outside Body Turning Radius, TR0
       (including bumper) __45____Ft. ___1.0_____In.
    b. Front Inner Corner Radius, TR1 __38__Ft. ___4.0_____In.
    c. Front Wheel Inner Turning Radius, TR2 __34__Ft. __6.0___in.
    d. Front Wheel Outer Turning Radius, TR3 __41____Ft. ___7.5_____In..
    e Inside Body Turning Radius, TR4 (including bumper) __23___Ft. __9.6_____In



15. Wheel Base
    a. Tractor (Artic. only) __19_____ Ft. ____0___ In.
    b. Trailer (Artic. only) ___25____ Ft. ___2____In.
    c. Total _ ___N/A___ Ft. ___N/A____ In.

16. Overhang, Centerline of Axle Over Bumper
    a. Front __7____Ft. ___3.5_____In.
    b. Rear __10____Ft. ___1.0_____In.

17. Floor
    a. Interior Length __48____Ft. ___7____In.
    b. Interior Width (excluding coving) __8____Ft. ____0____In.
    c. Total Standee Area ____87___Sq. Ft.
    d. Minimum distance between Wheelhouses
       Front: ___35.5____In.
       Center (artic only) ___42.5_____In
       Rear: ___41.5__In.
    e. Max. Interior floor slope (from horizontal) __3 Deg.

18 Passenger Capacity Provided
   a. Total Maximum Passenger Seating Capacity ___56____
   b. Standee Capacity __58_____

c. Minimum Knee to Hip Room __27.5__In
d. Minimum Foot Room ____11__In.

D. WEIGHT OF BUS

	No. of People	Front Axle	Centre Axle (artic only)	Rear Axle	Total Bus
Empty Bus Full Fuel and Farebox	0	9560	13310	21280	44150
Fully Seated Full Fuel and Farebox	56 + Driver	10564	17547	24589	52700
Fully Loaded Standee and Full Seated Full Fuel and Farebox	114 + Driver	12506	21846	27048	61400
Crush Load (1.5 x Fully Loaded)	171	14186	27034	30799	69950
GVWR		12506	21846	27048	61400
GAWR		14770	24250	28660	67680

Please note that the bus curb weight estimate is subject to +/-1% range. And does not include weight of the optional component offered.

E. ENGINE, MAIN

1. Manufacturer _____Cummins_____
2. Type _____Inline, Diesel Electronic_____
3. Model Number _____ISL 330_____
4. No. of Cylinders _____6_____
5. Bore _____4.49_____in
6. Stroke _____5.69_____in
7. Displacement ____543_ cu in
8. Compression ratio _____18.6:1_____
9. Injector type _____ Bosch closed nozzle _____
10. Net S.A.E. Horsepower ____330_____HP at ___2200_____RPM
11. Net S.A.E. Torque ____1100_____Lb. Ft. at ___1300_____RPM
12. Crankcase Oil Capacity
    a) New engine dry ____6.3_____qts
    b) New engine wet ____6.3_____qts
13. Turbocharger, Make & Type _____Holset HX40_____
14. Maximum Speed, no load ____2285_____RPM
15. Maximum Speed, full load ___2200_____RPM
16. Speed at Idle ____600_____RPM
17 Speed at Fast Idle __1000_____RPM

RFP NO. 4000

EXHIBIT 9

ALTERNATE COMPONENTS AND SUBSYSTEMS LIST
(Proposed Equals)

ITEM NUMBER	SECTION NUMBER	ITEM	✓	COLUMN "A" AS SPECIFIED	✓	COLUMN "B" PROPOSED EQUAL
1	[illegible]	Paint		Dupont Imron	X	SEE DEVIATION #8
2	5.2[illegible]	Decals	X	As Specified		
3	[illegible]2.1.2.7	[illegible]rosion Protection	X	As Specified		
4	[illegible]2.1.2.1	[illegible]Protective Pretreatment	X	PPG Coroshield		
5	5.2.1.2.9	Towing	X	As Specified		
6	5.2.1.4	Interior Panels	X	As Specified		
7	5.2.1.7.3	Wheelchair [illegible]	X	As Specified		
8	5.2.1.9.3	Engine Compartment Door	X	As Specified		
9	5.2.2.1.3	Door Actuators	X	[illegible]Bendpar		
10	5.2.2.2.1	Windshield Wipers	X	Sprague	X	SEE DEVIATION #16
11	5.2.2.3.1	Exterior Lighting	X	[illegible]-Volt - LED		
12	5.2.2.3.3.	Passenger Lighting		I/O Corp. LED	X	SEE DEVIATION #18
13	5.2.2.3.5	Driver's Controls	X	As Specified		
14	5.2.3.1	Trim Materials	X	As Specified		
15	5.2.3.1.1	Trim Panels		As Specified	X	SEE DEVIATION #19
16	5.2.3.1.2	Headlining	X	As Specified		
17	5.2.3.1.4	Rear Bulkhead	X	As Specified		
18	5.2.3.2.1	Seats	X	As Specified		
19	5.2.3.3	Driver's Seat	X	As Specified		
20	5.2.3.3.2	Seat Foam	X	Polyurethane		
21	5.2.4.4	Roof Hatches	X	Spheros		
22	5.2.6	Ancillary Features	X	As Specified		
23	5.2.6.2.1	External Mirrors	X	B & R		

REFER TO: BAFO-DEVIATION PAGES 35, 36, 37 & 38 1

NEW FLYER

TECHNICAL PROPOSAL WORKSHEET
EXHIBIT #10

SECTION #4 - TECHNICAL PROPOSAL(S)
TAB #5P:
Technical Proposal Worksheet – Exhibit 10

New Flyer has completed independent Technical Proposal Worksheet(s) for the following bus models:

1) 60' LFR Diesel
~~2) 60' LFR Diesel Hybrid (Allison Ep50)~~

Please refer to the attached worksheets.

BEST & FINAL OFFER REVISION:

Updated technical proposal worksheets for the configurations above are attached. The worksheets incorporate any required Addendum #5 requested revisions.

Please refer to the attached documentation.

DIESEL 60-FT BUS

(WITH ISL ENGINE AND VOITH TRANSMISSION)

RFP NO.4000

EXHIBIT 10

TECHNICAL PROPOSAL WORKSHEET
(Submit with Proposal and submit for each type of bus included in the Proposal)

PROPOSER'S NAME ____New Flyer of America_____

PROPOSER'S ADDRESS__711 Kernaghan Ave._____
Winnipeg, Manitoba, Canada

A. BUS MANUFACTURER_____New Flyer of America_____
Bus Model _____D60LFR_____

B. BASIC BODY CONSTRUCTION
1. Type __Semi-monocoque___
2. Tubing or Frame Member Thickness & Dimension
   a. Overstructure Material Carbon Steel__Thickness .075 to .25in.
   b. Understructur Material Carbon Steel__Thickness .075 to .25in.
3. Skin Thickness and Material
   a. Roof Material _Fiberglass__Thickness _0.18 +0/-.06 in.
   b. Sidewall Material _Primed Aluminum 0.08 in.
   c. Skirt Panel Material _N/A ___Thickness _N/A___ in.
   d. Front End Material _Fiberglass__ Thickness _0.18+0.03___ in.
   e. Rear End Material _Fiberglass__ Thickness _0.18+0.03___ in.

D. DIMENSIONS
1. Overall Length
   a. Over Bumpers _61____Ft._7.5____In.
   b. Over Body _60____Ft._7____In.
2. Overall Width
   a. Over Body excluding Mirrors ___102___In.
   b. Over Body including Mirrors - driving positions ___132___In.
   c. Over Tires Front Axles ___98___In.

RFP NO. 4000-02

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB 0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

(See reverse for public burden disclosure.)

1. Type of Federal Action: ☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	**2. Status of Federal Action:** ☐ a. bid/offer/application b. initial award c. post-award	**3. Report Type:** ☐ a. initial filing b. material change **For Material Change Only:** year ______ quarter ______ date of last report ______

4. Name and Address of Reporting Entity: ☐ Prime ☐ Subawardee Tier ____, if known: **Congressional District, *if known*:**	**5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:** **Congressional District, if known:**
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable*: ______
8. Federal Action Number, *if known*:	**9. Award Amount, *if known*:** $
10. a. Name and Address of Lobbying Entity (if individual, last name, first name, MI):	**b. Individuals Performing Services** (including address if different from No. 10a) (last name, first name, MI):

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

11. Amount of Payment *(check all that apply)*: $ ______ ☐ actual ☐ planned	**13. Type of Payment (check all that apply):** ☐ a. retainer ☐ b. one-time fee ☐ c. commission ☐ d. contingent fee ☐ e. deferred ☐ f. other; specify: ______
12. Form of Payment *(check all that apply)*: ☐ a. cash ☐ b. in-kind; specify: nature ______ value ______	

14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s), or Member(s) contacted, for Payment indicated in Item 11:

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

15. Continuation Sheet(s) SF-LLL-A attached: ☐ Yes ☐ No

16. [illegible]

Signature: ______
Print Name: Mr. Paul Smith
Title: Exec. Vice President, Sales & Marketing
Telephone No.: (204) 224-1251 **Date:** Sept. 23, 10

Federal Use Only:

Authorized for Local Reproduction Standard Form - LLL

RFP NO. 4000-02

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence 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 a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or a subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.
16. The certifying individual shall sign and date the form, print his/her name, title, and telephone number.

Define. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

RFP NO. 4000-02

DISCLOSURE OF LOBBYING ACTIVITIES

APPROVED BY OMB 0348-0046

CONTINUATION SHEET

Reporting Entity: NEW FLYER OF AMERICA, INC. Page 1 of 1

Authorized for Local Reproduction Standard Form - LLL-A

RFP NO. 4000

EXHIBIT 8

CERTIFICATE OF COMPLIANCE WITH BUS TESTING REQUIREMENTS

The undersigned certifies that the vehicle offered in this procurement complies and will, when delivered, comply with 49 U.S.C. § 5323(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 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: March 8, 2010

Signature: ______

Company Name: New Flyer of America Inc.

EXHIBIT 5

BUY AMERICA AUDIT WORKSHEET -ROLLING STOCK

A. Law Regarding Compliance with Buy America Regulations (49 CFR §661.11(a))

1. The cost of components produced in U.S. is more than 60% the cost of all components:

a. component is of domestic origin if more than 60% of the subcomponents of that component, by cost, are of domestic origin and component is manufactured in U.S. (49 CFR §661.11(i))

b. a subcomponent is of domestic origin if manufactured in U.S. (49 CFR §661.11(j)).

2. Final assembly occurs in U.S. (defined as creation of the end product from individual elements brought together for that purpose through application of manufacturing processes (49 CFR §661.11(t)).

B. Procedure for Showing Buy America Compliance

1. Step 1 - Show information for components, listing as many components needed to reach a cost percentage greater than 60% of the cost of all of the components. Example (assuming the bid price is $200, the fully allocated cost of all components if $100 and the cost of final assembly is $100):

Component	Manufacture	Location	Percentage of Cost of All Cost or Components of The Rolling Stock	
Seating	XYZ	must be U.S.	$30	30%
Car Shells	ABC	must be U.S.	$31	31%

The cost information can be shown as a dollar amount or as the percentage of the cost of a specific component in relation to the cost of all components for the rolling stock.

2. Step 2 - Show information for subcomponents for each component, listing as many subcomponents needed to reach a cost percentage greater than 60% of the cost of all subcomponents of that component. Example (assuming that the fully allocated cost of all subcomponents for the component, which excludes the manufacturing cost, is $25):

Seating Component

Subcomponents	Manufacture	Location	Percentage of Cost Cost or of all Subcomponents	
Cushions	LMT	must be U.S.	$12	48%
Metal Frame	ARE	must be U.S.	$10	40%

3. Step 3—final assembly occurs in U.S.

a. state location of final assembly;

b. briefly describe activities to occur during final assembly; and

c. state proposed total cost of final assembly

EXHIBIT 6

CERTIFICATION OF PROPOSER REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

(Proposer) New Flyer of America Inc. certifies, to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any Federal department or agency;

2. Have not within a three year period preceding this bid been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain or performing a public (Federal, state or local) transaction or contract under a public transaction; 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;

3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, state or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and

4. Have not within a three year period preceding this bid had one or more public transactions (Federal, state or local) terminated for cause or default.

If the Proposer is unable to certify to any of the statements in this certification, the Proposer shall attach an explanation to this certification.

(Proposer) New Flyer of America Inc. CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

Signature of Authorized Individual

E.V.P., Sales & Marketing
Title

EXHIBIT 7

CERTIFICATION REGARDING LOBBYING

I, Paul Smith (Title: E.V.P., Sales & Marketing), Hereby Certify
(Name Of Authorized Individual)

On Behalf Of New Flyer of America Inc. That:
(Proposer)

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 influencing or attempting to influence 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-III, "Disclosure Form to Report Lobbying," in accordance with its instructions.

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 Section 1352, Title 31, US. Code. 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.

Signature Of Authorized Individual

E.V.P., Sales & Marketing
Title

proposed subcontractor to participate in the Agreement will be determined, in part, in accordance with the applicable FTA regulations. The Contractor shall also require that the "Certification Regarding Lobbying" (Attachment "C") be included in the award of documents for all subcontracts exceeding $100,000 at any tier, and shall ensure that such subcontractor shall execute the Certification Regarding Lobbying and, if applicable, the Disclosure of Lobbying Activities form. All disclosure forms, but not the Certification Regarding Lobbying, shall be forwarded to Port Authority, whereupon Port Authority will forward the same to FTA.

10. This Agreement and all covenants hereof shall inure to the benefit of and be binding upon Port Authority and the Contractor respectively and their successors, assigns and legal representatives.

11. This Agreement and the other Contract Document shall be interpreted, endorsed and governed in accordance with the substantive laws of the Commonwealth of Pennsylvania, regardless of its conflict of law or choice of law provisions.

12. All notices or other communications to either party by the other shall be deemed given when made in writing and deposited in the United States mail, postage prepaid, addressed as follows:

To Port Authority:
Port Authority of Allegheny County
345 Sixth Avenue, 3rd Floor
Pittsburgh, PA 15222-2527
Attention: _____

To Contractor:
_____
_____
_____
Attention: _____

IN WITNESS WHEREOF, the parties hereto, by their duly authorized officers, have executed this Agreement as of the day and year first above written.

PORT AUTHORITY OF ALLEGHENY COUNTY

ATTEST By: _____

_____ Title: _____

(SEAL)

ATTEST: CONTRACTOR

_____
(Company Name)

_____ By: _____

(SEAL) Title: _____

RFP NO. 4000

EXHIBIT 4

CERTIFICATE OF TVM DBE COMPLIANCE

In connection with the award, if any, by Port Authority of Allegheny County as a result of the issuance of the RFP:

I hereby certify that the New Flyer of America Inc. (name of company) has complied with the requirements of 49 CFR 26, participation by Disadvantage Business in DOT Financial Programs, as amended, and that our goals have not been disapproved by the Federal Transit Administration.

The goal for this Agreement is 11 %. Please refer to the attached letter from the US DOT (FTA).

New Flyer of America Inc. Name of Company

_____ Signature of Authorized Official

Paul Smith - E.V.P., Sales & Marketing Name and Title of Authorized Official

March 9, 2010 Date

RFP NO. 4000

EXHIBIT 5

BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

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 CFR Part 661:

Date: March 9, 2010

Signature: _____

Company Name: New Flyer of America Inc.

Title: E.V.P., Sales & Marketing

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 CFR Part 661.7.

Date: _____

Signature: _____

Company Name: _____

Title: _____

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 142		Proposer:	New Flyer of America
RFP #: 4000	Page: 212	Section:	5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
All

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing EMP supplied cooling package with welded tanks and other features as per attached documentation.

The cooling system is sized to maintain fluids at safe, continuous operating temperatures during the most severe operations possible with the coach loaded to GVWR and with ambient temperatures up to 115° F.

Please refer to the attached documentation under Section 4- Tab 4-I.

Rationale (Pros & Cons):

[BAFO -Deviation]

RFP NO. 4000

EXHIBIT 3

SAMPLE AGREEMENT

THIS AGREEMENT is made and entered into this _____ [Date], by and between PORT AUTHORITY OF ALLEGHENY COUNTY, a body corporate and politic organized and existing under the laws of the Commonwealth of Pennsylvania, as amended, and having its principal office at 345 Sixth Avenue, 3rd Floor, Pittsburgh, Pennsylvania 15222-2527 (hereinafter referred to as "Port Authority") and _____ [Name of Contractor], a _____ [Identify nature of entity] having its principal office at _____ [List Address] (hereinafter referred to as the "Contractor").

WITNESSETH:

WHEREAS, Port Authority requires the Contractor to provide a minimum of twenty-five (25) new 60 foot, low floor articulated and/or twenty-eight (28) new 40 foot, low floor transit buses (individually a "bus" or "coach"; collectively the "buses" or "coaches"), as well as the delivery of data, manuals, drawings, training, support services, spare parts, special tools and equipment and the other required items of the quantity and quality set forth in the Contract Documents (the "Work"); and

WHEREAS, to obtain a qualified contractor, Port Authority requested the submission of proposals to provide the Work as described in the "Request for Proposal 4000, Procurement of 40 foot Low Floor and/or 60 Foot Low Floor Articulated Transit Type Coaches," dated January, 2010 (the "RFP"); and

WHEREAS, in response to the RFP, the Contractor submitted a Proposal and Port Authority has selected the Contractor to perform the Work; and

WHEREAS, Port Authority and the Contractor desire to set forth their mutual understanding and agreement concerning, among other things, the scope of the Work and the basis upon which the Contractor will be compensated for the Work.

NOW, THEREFORE, the parties hereto, intending to be legally bound hereby, do mutually covenant and agree as follows:

1. The recitals and references aforesaid are incorporated herein and made a part hereof.

2. Whenever terms or abbreviations are used in this Agreement, they shall have the same meaning expressly set forth herein. Otherwise, they shall have the meaning set forth in the Contract Documents.

3. The Contract Documents are made part of this Agreement and are incorporated herein by reference. The Contract Documents are comprised of the following:

(a) the RFP;
(b) the Advertisement;
(c) this Agreement;
(d) the contract forms and exhibits;
(e) all bonds;
(f) the Contract Conditions and Instructions to Proposers;
(g) the Quality Assurance section;
(h) the Warranty Provisions;
(i) the Technical Specifications;
(j) the Supplemental Technical Specifications;
(k) the Appendix;
(l) the Notice to Proceed;
(m) any change orders; and
(n) the Proposal upon which the Agreement is awarded.

4. The Contractor shall furnish all materials, equipment, transportation, labor and supervision and perform all project management/administration, designing, manufacturing, deliveries, testing, furnishing, training and other services necessary and incidental for the proper, timely and satisfactory completion of the Work as set forth in the Contract Documents and to do all acts and tasks required by the Contract Documents.

5. In consideration of the Contractor's proper, timely and satisfactory completion of the Work, Port Authority agrees to pay the Contractor and the Contractor agrees to accept from Port Authority, as full payment for the Work and as a complete discharge of Port Authority's liability to make payment to the Contractor for Contractor's performance of the Work, the total sum of _____ ($_____) (hereinafter referred to as the "Contract Sum"), subject to additions and deductions as provided in the Contract Documents and pursuant to the terms and payment schedule set forth in the Contract Documents. The specific units and costs making up the Contract Sum are set forth in Attachment "A" hereto which is made a part hereof.

6. The acceptance by the Contractor of final payment of the Contract Sum shall be, and shall operate as, a release to Port Authority of all claims and liability to the Contractor for the Work or arising under this Agreement and for every act, omission and neglect of Port Authority. No payment, however, final or otherwise, shall operate to release the Contractor or its surety from any obligation under this Agreement, shall be evidence of the proper performance of the Agreement or the Work, in whole or in part, by the Contractor or shall be construed to be acceptance by Port Authority of defective or improper Work, materials or equipment or the failure by the Contractor to comply with the requirements of the Contract Documents.

7. Port Authority reserves the right, at its option, to order, and if ordered the Contractor agrees to provide, up to one hundred (100) additional 60 foot, low floor articulated coaches and five hundred (500) additional 40 foot, low floor coaches and corresponding equipment for delivery as specified by Port Authority within five (5) years of the Notice to Proceed. The cost of such coaches and equipment shall be the price for each type of coach and equipment set forth in the Summary of Prices submitted with the Contractor's Proposal plus an inflation factor which will be calculated utilizing the producer price index ("PPI"), 141103 Motor Coaches and Buses based on the following formula:

40-Foot Transit Type Coaches -- Option Quantity: 500.
60-Foot Transit Type Coaches -- Option Quantity: 100.

$$\text{Cost per Coach} = \frac{\text{(Unit Price for Item 1) x (P. P. I. at date of Option)}}{\text{(P. P. I. at date of Proposal)}}$$

Such additional coaches and equipment will be manufactured and delivered by the Contractor in accordance with the Contract Documents. All provisions of the Contract Documents shall apply to any option order made by Port Authority. All deliverables listed in the Technical Specifications or elsewhere in the Contract Documents shall be supplied with each option that is exercised by Port Authority. These deliverables shall include, but not be limited to: major component packages, spare parts, test equipment, manuals, drawings and special tools (as described in the Contract Documents).

8. This Agreement may be subject to the prior written approval and concurrence of the Federal Transit Administration and others.

9. The Contractor shall provide to Port Authority an executed Certification of Proposed Subcontractor (Attachment "B") for each proposed subcontractor to this Agreement. The eligibility of a

NEW FLYER

WATER LEAK TESTING STANDARDS

Purpose:

The purpose of this document is to establish a standard method of determining acceptable water tightness of all New Flyer coaches.

Scope:

This standard includes all coaches manufactured by New Flyer Industries.
To insure a "zero" leaks product, the following areas will be visually inspected on every coach:

- Destination sign compartment
- Wheelchair areas
- Windows and window seals
- Doors and door glass
- Mechanical boxes
- Antenna
- Roof hatches
- Rear PLC compartment
- Bellows and bellows channels
- Evaporators (roof top)
- Muffler close out
- Rear crown
- Front crown
- Battery compartment
- Headlights
- Exterior running lights
- Roof
- Designated exterior watertight compartments
- Windshield seal

Limitations:

This process is limited to testing for water leakage within the passenger compartment of the vehicle, interior equipment compartments, and windows. Exceptions may include acceptable water seepage in unsealed exterior access doors and under entrance and exit doors. One cup of water spray may pass through the lower brushes of each location per (10) minute period.

NEW FLYER

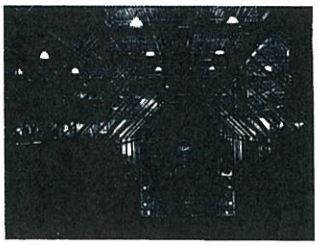
Inspection procedures:

A New Flyer Quality Inspector (Q.A.) will inspect every coach before final release to the customer.

The test:
Once the Q.A. is aboard the bus, pressurized water is applied to the nozzles. The bus is sprayed for ten (10) minutes. Upon customer request, we will start the engine and/or activate the HVAC system. During the test, visual inspection is done on all interior areas with the aide of cabin lights and flashlights. Inspection is done to look for presence of water.
'Presence of water" is defined as any water that is sufficient enough in volume to produce a droplet
If leaks are found, repairs are made, and the bus is retested until no leaks are found.
Approval by New Flyer Inspection concludes the water testing of the coach.
At the customer's request, tests may be audited periodically to ensure satisfaction.

The above test will be performed under the following conditions:

Water test booth:
The test booth is a curtained, open frame structure with moveable end gate pivots. It is designed to saturate the entire surface of the bus with pressurized water.
The booth is capable of testing any size bus produced by New Flyer

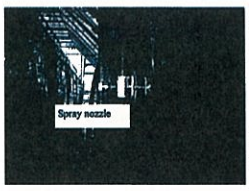


NEW FLYER

Nozzles:

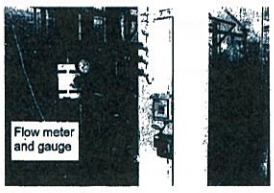
Nozzles are symmetrically located in the booth to ensure complete, overlapping coverage on the entire exterior surface of the bus, including the wheel well areas.

Test nozzles maintain a consistent average distance (48") from the exterior of any size coach



Water flow:

Water is forced through the nozzles at approximately 35 p.s.i. at a rate of 1.8 g.p.m./nozzle



RFP NO. 4000

EXHIBIT 2

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Deviation #:	141	Proposer:	New Flyer of America
RFP #:	4000	Page: 121	Section: 3.7

Complete Description of Deviation:

Port Authority Specification Requirement:

(Resident Inspectors)
A copy of the Q.C. book which follows the bus through the assembly line must be given to the Resident Inspectors at the time the bus is completed.

New Flyer's Deviation/Clarification:

New Flyer provides testing results, serial numbers and copies of defect sheets only.

Rationale (Pros & Cons):

Revised during 6/10/2010 teleconference:

New Flyer will provide a copy of the QC inspection book with each bus.

RFP NO. 4000

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Deviation #: 137 Proposer: New Flyer of America

RFP #: 4000 Page: 266 Section: 5.3.6.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Fuel Tank)
Fuel tank capacity shall be at least 160 usable gallons.

New Flyer's Deviation/Clarification:

The 60' diesel buses are equipped with a 145 usable gallon capacity fuel system, whereas the diesel-hybrid configuration utilizes a 125 usable gallon configuration.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 138 Proposer: New Flyer of America

RFP #: 4000 Page: 266 Section: 5.3.7.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Components)
The coach shall be equipped with an A/C system consisting of a Thermo-King AT-1 unit, utilizing an engine belt-driven screw type compressor, two (2) rooftop evaporator units and a condensing unit located a the top rear.

New Flyer's Deviation/Clarification:

New Flyer is proposing a roof mounted Thermo King RLF HVAC unit system solution for both our 40' and 60' vehicle platforms. Thermo King designed this system specifically for New Flyer and our EPA 2010 compliant powertrain platforms. This unit also utilizes the Interlligaire III control system.

Rationale (Pros & Cons):

Revised during 6/10/2010 teleconference:

New Flyer clarified that they will supplying ThermoKing AT13 (or AT15) rooftop air conditioning units on the articulated buses.

RFP NO. 4000

EXHIBIT 2

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Deviation #: 139 Proposer: New Flyer of America

RFP #: 4000 Page: 146 Section: 5.2.1.1.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Numbering and Signing)
Wording in the engine, underfloor, interior passenger and driver compartments shall be stamped in aluminum plates. They shall be colored appropriately to be complementary to the adjacent surface.

New Flyer's Deviation/Clarification:

New Flyer provides screen-printed plates in lieu of stamped plates.

Rationale (Pros & Cons):

Clarified During 6/7/2010 teleconference;

Wording in the engine compartment shall be stamped in aluminum plates.

RFP NO. 4000

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Deviation #: 140 Proposer: New Flyer of America

RFP #: 4000 Page: 123 Section: 3.9.2.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Water Test)
All nozzles shall provide a minimum of 40 psi (measured at the nozzle tip). The water test shall be performed continuously for twenty (20) minutes. The first ten (10) minutes shall be performed with the coach engine off. Then the engine shall be started and the remaining ten (10) minutes shall be performed with all coach systems operating.

New Flyer's Deviation/Clarification:

New Flyer follows standard water test procedure on every. New Flyer's water test shall be 10 minutes long with a water flow pressure of 35 psi. Water is forced through the nozzles at approximately 35 psi. at a rate of 1.8 GPM./nozzle

Rationale (Pros & Cons):

Please refer to the attached documentation.

RFP NO. 4000

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Deviation #: 133 Proposer: New Flyer of America

RFP #: 4000 Page: 263 Section: 5.1.4.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Physical Size)
Length 60 feet, 0 inches (+0, -3 inch)

New Flyer's Deviation/Clarification:

Our 60' bus has a body length of 60' 7" +/- 1" and an overall length of 61' 7.5" +/- 1".

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 134 Proposer: New Flyer of America

RFP #: 4000 Page: 264 Section: 5.1.4.3, 5.2.3.2.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Capacity, Seat Dimensions and Arrangements)
Rated capacity of the 60 foot articulated coach shall be no less than 57 seated passengers with the standard seating configuration.

New Flyer's Deviation/Clarification:

The total seating capacity on our proposed 60' bus is limited to 56 seats considering two exit doors requirement and wheelchair barriers located at front flip-up seats.

Rationale (Pros & Cons):

Please refer to the attached seating layout under Section 4 – Tab IV-M. (60-ft proposal)

RFP NO. 4000

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Deviation #: 135 Proposer: New Flyer of America

RFP #: 4000 Page: 265 Section: 5.2.4.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Roof Escape Hatches and Roof Vents)
The coach shall be equipped with three (3) roof escape/vent hatches, Spheros Vision glass hatch # RAL 7042 or Approved equal, which shall be captive and resetable from inside the coach when released.

New Flyer's Deviation/Clarification:

As these specified hatches are bigger than standard hatches, it cannot be installed on our proposed 60-ft buses.

Installing larger roof hatches would require modifications to the roof structure.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 136 Proposer: New Flyer of America

RFP #: 4000 Page: 266 Section: 5.3.2.3

Complete Description of Deviation:

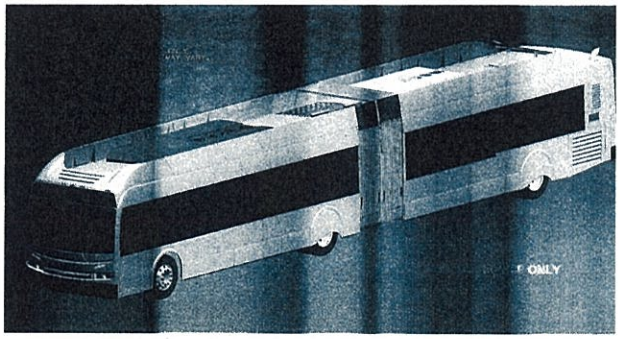
Port Authority Specification Requirement:

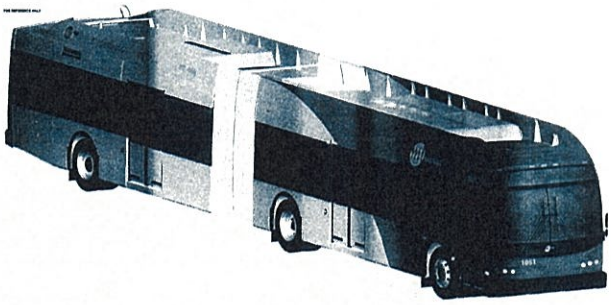
(Center Axle)
For the 60-foot articulated coach, the center axle shall be the same model as the rear driving axle. The only difference being that since it is not a driving axle, it is not necessary to have a complete differential carrier assembly. The braking system shall be identical to that on the rear axle.

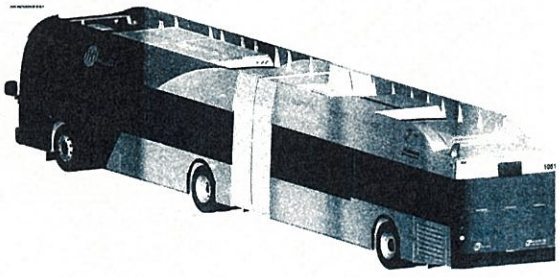
New Flyer's Deviation/Clarification:

The center axle is a M.A.N. model HONG-1100 which is different that the drive axle assembly. The brake assembly is only slightly different on the center axle, relative to the rear axle.

Rationale (Pros & Cons):







RFP NO. 4000

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Deviation #: 132		Proposer:	New Flyer of America
RFP #: 4000	Page: 263		Section: 6.1

Complete Description of Deviation:

Port Authority Specification Requirement:

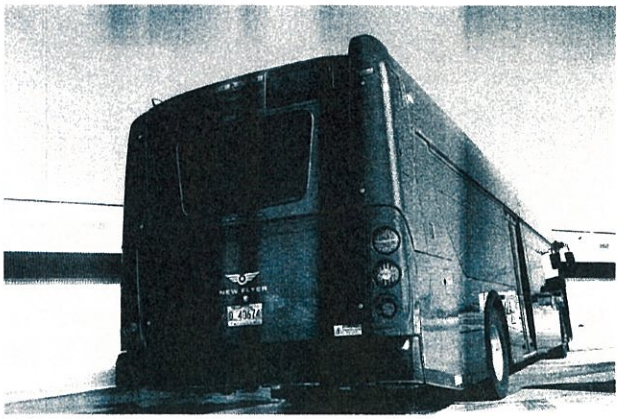
(60 FOOT ARTICULATED COACHES; Scope)
CHECK SPEC

New Flyer's Deviation/Clarification:

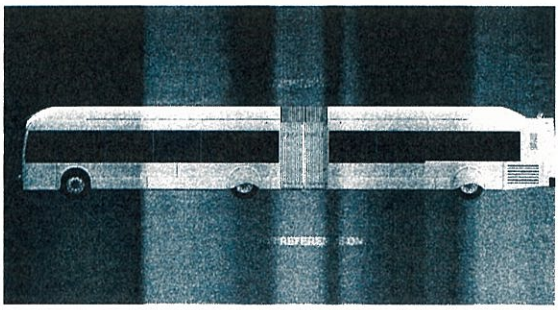
New Flyer's proposal is based on providing the joint with 49-degree lock angle with maximum 52-degree angle.

Rationale (Pros & Cons):

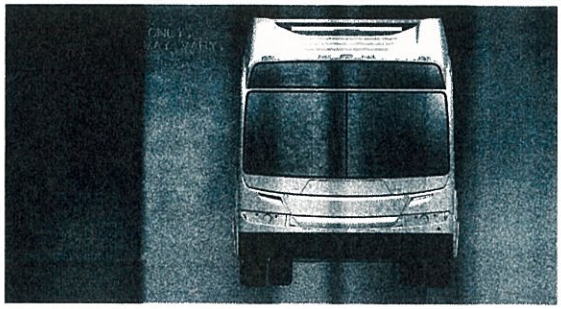
330 EXHIBIT #2 [DEVIATIONS]



331 EXHIBIT #2 [DEVIATIONS]



332 EXHIBIT #2 [DEVIATIONS]



333 EXHIBIT #2 [DEVIATIONS]

RFP NO. 4000

EXHIBIT 2

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Deviation #: 128 Proposer: New Flyer of America

RFP #: 4000 Page: 259-260 Section: 5.8

Complete Description of Deviation:

Port Authority Specification Requirement:

(HYBRID OPTION)
The contractor shall bid a Parallel Hybrid Drive, or Approved Equal as an option.

Hybrid drive shall be an Allison EP 40 drive system.

New Flyer's Deviation/Clarification:

For the 60' buses, New Flyer is proposing an EP50 drive system.

We are also quoting an optional hybrid configuration from BAE for the 35' and 40' buses being requested.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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Deviation #: 129 Proposer: New Flyer of America

RFP #: 4000 Page: 260 Section: 5.8.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(ENGINE)
The bus shall be powered by a hybrid/diesel propulsion system. Engine shall be a Cummins ISB engine capable of giving satisfactory life and performance in transit service.

New Flyer's Deviation/Clarification:

The 60' buses require the installation of a Cummins ISL 330HP engine for the hybrid application.

Rationale (Pros & Cons):

ISL engine's increased torque level is better suited to propel the larger 60-ft bus.

RFP NO. 4000

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Deviation #: 130 Proposer: New Flyer of America

RFP #: 4000 Page: 260 Section: 5.8.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(HYBRID ELECTRICAL)
The electrical system provides and distributes power for all electrical components in the bus. The system supplies a nominal 12 volts to incandescent lights and instruments and 24 volts to all remaining circuits.

New Flyer's Deviation/Clarification:

New Flyer would like to clarify that the 12 volt and 24 volts distribution to different systems is as per the design of our buses. Here are the typical applications require 12 V power:
mirrors
wipers
ramp
horn
farebox
hybrid DPIM / ESS
radio system
hybrid drive unit
hybrid ignition relay
Vansco modules got both 12V and 24V
shift selector
AVA/AVL got both 12V and 24V typically

Rationale (Pros & Cons):

Based on 6/10/2010 teleconference:
Port Authority clarified that the farebox circuit on the bus shall be 24VDC.

RFP NO. 4000

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Deviation #: 131 Proposer: New Flyer of America

RFP #: 4000 Page: 261 Section: 5.9

Complete Description of Deviation:

Port Authority Specification Requirement:

(BRT STYLING OPTION)
The front cap shall be a composite material and shall have a single piece windshield glazing that includes an integrated destination sign glass and windshield defroster system. The front cap shall have a left and right front quarter window, with dedicated quarter window wipers for safety and to minimize accumulation of splash and spray.

The Mirrors shall be Class A type and well suited to enhance and compliment the clean aerodynamic .....
The front close out / bumper shall also be of advanced / composite design to complement .....

The rear tail lamps shall be cluster mounted in a triangular shape with body cladding around the cluster.

New Flyer's Deviation/Clarification:

New Flyer proposed BRT option buses are equipped with two windshields without left and right quarter window. On 60-ft bus, a separate destination glass is installed.

Buses will be equipped with Our standard mirrors, bumpers and tail lights.

Rationale (Pros & Cons):

Please refer to the attached pictures.

RFP NO. 4000

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Deviation #: 124 Proposer: New Flyer of America

RFP #: 4000 Page: 238 Section: 5.3.8.1.1, 5.3.8.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(System Overview, Mobile Radio)
Motorola CDM1550 Radio with Flash Port update and GEStar ID with each push-totalk (PTT) on the operators handsets.

The radio shall be a Motorola CDM1550 with Flash port activation, remote mount 450- 512 MHz.

New Flyer's Deviation/Clarification:

Please note, the specified CDM1550 radio model does not have following features specified in the solicitation.

Flash Port Activation
Digital technology as an internal option

New Flyer has proposed CDM 1550 radio as requested.

Rationale (Pros & Cons):

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Deviation #: 125 Proposer: New Flyer of America

RFP #: 4000 Page: 239 Section: 5.3.8.2.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cable Raceway/Conduit)
A conduit with a one-inch diameter shall be installed within six inches of the antenna connector termination to allow protection to the antenna cable/wire to the radio enclosure. This requirement for the antenna conduit may be deleted from the sidewall to the radio enclosure, if the antenna wire is placed in a suitable wire channel.

New Flyer's Deviation/Clarification:

New Flyer provides a 0.56" inner diameter conduit in lieu of 1" conduit due to space limitations.

Rationale (Pros & Cons):

Revised based on eMail from Chris Cudmore on 7/27/2010:

New Flyer will accommodate the need to pull the antenna wire through the conduit by utilizing a combination of 1" conduit and convoluted tubing.

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Deviation #: 126 Proposer: New Flyer of America

RFP #: 4000 Page: 241 Section: 5.3.8.2.6.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(PA Microphone)
The PA microphone shall be mounted on a 1-3/4" mounting flange base secured to the dash area. The location of the microphone flange shall be determined where normal daily use will not cause stress to the dash material and cause breakage. The microphone shall have a spring-loaded push to talk switch to activate the system. The microphone shall be SHURE model 5155B-G18 or Approved Equal. An additional external microphone jack shall be provided in a close proximity to the PA amplifier controls. The external jack shall be industry accepted such as an XLR jack.
The Authority Engineer shall approve the installation.

New Flyer's Deviation/Clarification:

New Flyer utilizes REI (Radio Engineering Industries) equipment which is inverted hanging from the above at near steerside front post.

Rationale (Pros & Cons):

REI offers excellent customer support and is a preferred supplier.

RFP NO. 4000

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Deviation #: 127 Proposer: New Flyer of America

RFP #: 4000 Page: 255-256 Section: 5.5.3.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(DRAWINGS)
Port Authority shall have the right to use, duplicate or disclose the data, including drawings, required under this contract for any purpose whatsoever and to permit others to do so, except as otherwise stated in this technical specification. If certain data include information that has been patented or copyrighted, or which the Contractor believes includes trade secrets or constitutes confidential or privileged commercial or financial information, Contractor, prior to disclosure, shall identify all such proposed Limited Rights data to Port Authority, along with evidence to support such position.
For data that Port Authority consents to designate as Limited Rights data, Port Authority shall have the right to use, duplicate or disclose Limited Rights data, in whole or in part, with the express limitation that such Limited Rights data shall not, without the written permission of the party furnishing such data:

New Flyer's Deviation/Clarification:

All plans, diagrams, schematics, blueprints and drawings (including "As Built" drawings) prepared and produced by New Flyer in respect of the buses are intellectual property of the New Flyer and are protected by copyright and are considered proprietary and confidential information of the New Flyer. Such information shall be considered Limited Rights data of the New Flyer.

New Flyer's proposal is also based on deleting the language requirement "For data that Port Authority consents to designate as Limited Rights data".

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 120 Proposer: New Flyer of America

RFP #: 4000 Page: 235 Section: 5.3.7.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(CAPACITY AND PERFORMANCE)
The air conditioning system shall be a Thermo-King Intelligair III unit or Approved Equal and shall be capable of reducing the passenger compartment temperature from 110° to 80°F in less than 20 minutes after engine start-up under the following conditions: engine temperature shall be within the normal operating range at the time of start-up of the cool-down test and engine speed shall be at 1500 RPM.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing the HVAC system meeting following performance, which is inline with the APTA guideline white book specification.

Thermo-King HVAC system capable of reducing the passenger compartment temperature from 110° to 90°F in less than 20 minutes after engine start-up under these conditions; engine temperature shall be within the normal operating range at the time of start-up of the cool-down test and engine speed shall be at 1500 RPM.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 121 Proposer: New Flyer of America

RFP #: 4000 Page: 235 Section: 5.3.7.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(CAPACITY AND PERFORMANCE)
A Spheros/Webasto Thermo 300 (104,000BTU) fully automatic diesel fuel-fired heater or Approved Equal shall be provided.

The Spheros/Webasto heater shall be enclosed in a stainless steel box.

New Flyer's Deviation/Clarification:

Our 60' buses are equipped with a Spheros/Webasto Thermo 350 (120,000 BTU/Hr) auxiliary heater.

Please note, the heater is not enclosed in a box, it is located in the engine compartment.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

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Deviation #: 122 Proposer: New Flyer of America

RFP #: 4000 Page: 236 Section: 5.3.7.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Passenger Area)
Excess airflow shall be directed into the front destination sign area for defrosting and ultimately directed to the top of the windshield through vents in the bottom of the destination sign area enclosure.

New Flyer's Deviation/Clarification:

New Flyer utilizes an electric grid heater for destination glass defrosting without any provision for airflow into the front destination sign area.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 123 Proposer: New Flyer of America

RFP #: 4000 Page: 237 Section: 5.3.7.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Driver's Area)
Velocity at each distribution outlet shall be at least 200 feet per minute.

New Flyer's Deviation/Clarification:

New Flyer buses are equipped with a defroster having 650 cfm air flow capacity at max speed and considering 6 to 7 vents at front defroster, the flow rate at each distribution outlet will be less than 200 cfm.

Rationale (Pros & Cons):

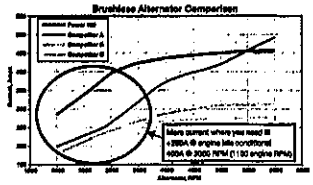
EMP's *High Performance Commercial Grade*

POWER 450 BRUSHLESS ALTERNATOR

Perfect 50 DN Drop-In Replacement for Reliable Power

24V 450A

Brushless Alternator Comparison



Need More Power? Having Alternator Troubles?

- Air Cooled - Hazardous Oil Leaks Eliminated
- Quick Retrofit - Drop-In 50 DN Replacement
- High Efficiency
- Oversized Bearings For Robustness And Durability
- Corrosion Resistant
- Overvoltage Protection
- 450A, 24V Brushless Alternator

Markets

- Transit Bus
- Mining
- Agriculture
- Construction
- Fire & Rescue
- Military
- Forestry

Best In Class Performance at Low Speeds/Idle – EMP's Power 450!

Simply the BEST Power Solution on the Market!

EMP POWERING SOLUTIONS ... TODAY & TOMORROW

[BAFO]

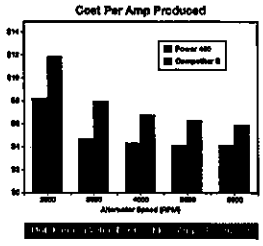
ALTERNATOR SPECIFICATIONS — POWER 450 BRUSHLESS ALTERNATOR

Brushless Alternator Comparison

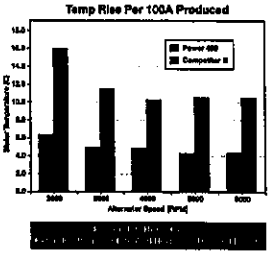
	Alternator A	Alternator B	Alternator C	EMP Power 450
Rated Amps @ 28VDC	300	320	370	450
Sensing	Yes	Yes	Yes	Yes
External Load Share Regulation	Yes	Yes	Yes	Yes
Alternator Profile	8" Dia x 13.1" L	11.2" Dia x 20.28" L	12" Dia x 17.75" L	10.2" Dia x 11" L
Alternator Weight	85 lbs.	130 lbs.	160 lbs.	100 lbs.
Off or ON Interlock	Yes	Yes	Yes	Yes
Cooled Media	Air	Air	Oil	Air
Maximum Alternator RPM	10,000	10,000	7,500	6,000
Max Continuous Operating Speed (RPM)	6,000	6,000	5,000	5,000
Engine Idle 600 RPM				
Alternator RPM	2,400	2,400	1,800	2,400
Output Amps	172	183	138	450
Efficiency	75.39%	80.29%	65.29%	75.00%
Engine High Idle 1000 RPM				
Alternator RPM	4,000	4,000	3,000	3,200
Output Amps	300	320	345	450
Efficiency	75.39%	79.39%	66.29%	75.00%
Max Engine Peak RPM				
Alternator RPM	6,000	6,000	4,500	4,800
Output Amps	311	494	370	450
Efficiency	67.39%	66.49%	51.39%	69.39%

* All measured data was taken at ambient temperature conditions and allowed to stabilized per SAE J56.

Cost Per Amp Produced



Temp Rise Per 100A Produced



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EMP

[BAFO]

RFP NO. 4000

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Deviation #: 118 Proposer: New Flyer of America

RFP #: 4000 Page: 234 Section: 5.3.6.6.9

Complete Description of Deviation:

Port Authority Specification Requirement:

(Charging Equalizer
)
The 12-volt charging system is to be equipped with a Vanner Model #EM-70 12-volt charging equalizer or Approved Equal.

New Flyer's Deviation/Clarification:

New Flyer is proposing a Vanner model #70-100M equalizer.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 119 Proposer: New Flyer of America

RFP #: 4000 Page: 234 Section: 5.3.7.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(CAPACITY AND PERFORMANCE)
In ambient temperatures of - 10° to -30°F, the average interior temperature shall not fall below 55°F while the coach is running on the design operating profile with no passengers.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on following:
In ambient temperatures of - 10° to -20°F, the average interior temperature shall not fall below 55°F while the coach is running on the design operating profile with no passengers.

Rationale (Pros & Cons):

Please note that based on weather history, the history lowest temperature of Pittsburgh is –19 degree F.

RFP NO. 4000

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Deviation #: 114 Proposer: New Flyer of America

RFP #: 4000 Page: 229 Section: 5.3.6.5.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wiring and Terminals)
Connections of wire 12 gauge or larger shall be bolted.

New Flyer's Deviation/Clarification:

As weatherpack connectors installed on our buses can handle wires up to 12 gauges, typically do not need to bolt 12-gauge wire.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 115 Proposer: New Flyer of America

RFP #: 4000 Page: 230 Section: 5.3.6.5.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Junction Boxes)
The components and circuits in each box shall be identified and their locations recorded on a schematic drawing permanently glued to or printed on the inside of the box cover or door.

New Flyer's Deviation/Clarification:

New Flyer will supply any required schematics, but due to space constraints, some schematics cannot be glued/printed to the inside of some electrical compartments.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 116 Proposer: New Flyer of America

RFP #: 4000 Page: 233-234 Section: 5.3.6.6.6

Complete Description of Deviation:

Port Authority Specification Requirement:

(Towing Provision)
An electrical receptacle for towing purposes shall be provided. This must be a Midland Berg #23602, 6-pin, weatherproof jack or Approved Equal.

New Flyer's Deviation/Clarification:

New Flyer supplies a Cole Hersee #12063 electrical towing receptacle.

Rationale (Pros & Cons):

Adjusted during 6/10/2010 teleconference:

New Flyer will supply and install electrical towing connector that mates with existing connector on Port Authority tow trucks.

RFP NO. 4000

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Deviation #: 117 Proposer: New Flyer of America

RFP #: 4000 Page: 234 Section: 5.3.6.6.7

Complete Description of Deviation:

Port Authority Specification Requirement:

(Alternator)
The alternator shall be a heavy-duty direct mount gear or belt driven Niehoff 24-volt DC self-rectifying low cut-in type having a minimum rated capacity output of 330 amperes or Approved Equal.

The alternator shall be a heavy-duty direct mount gear or belt driven Niehoff 24-volt Model C802, D configuration, DC self-rectifying low cut-in type having a minimum rated capacity output of 450 amperes or Approved Equal..

New Flyer's Deviation/Clarification:

Due to the varying electrical load requirements of our buses, the following alternators are being proposed:

EMP Power 450 alternator on 40' and 60' diesel buses
Niehoff C803 alternator on 60' diesel-hybrid buses.
Niehoff alternator on 40' diesel-electric buses.

Please refer to the attached documentations for EMP Alternator.

Rationale (Pros & Cons):

[BAFO -Deviation]

RFP NO. 4000

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Deviation #: 110 Proposer: New Flyer of America

RFP #: 4000 Page: 229 Section: 5.3.6.5.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wiring and Terminals)
All coach wiring, except battery and starter circuits, shall meet the specification requirements of SAE Standard J1128 for Type SXL and SAE Recommended Practice J1292.

New Flyer's Deviation/Clarification:

New Flyer supplies wiring that meets SAE GXL standards, unless there are applications where vendors prohibit the use of such wire.

Rationale (Pros & Cons):

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Deviation #: 111 Proposer: New Flyer of America

RFP #: 4000 Page: 229 Section: 5.3.6.5.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wiring and Terminals)
Battery and starter wiring shall be continuous cables with connections secured by bolted terminals

New Flyer's Deviation/Clarification:

Power cable connections to the battery are not continuous and are manufactured with high current busbars within the engine compartment fusebox.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 112 Proposer: New Flyer of America

RFP #: 4000 Page: 229 Section: 5.3.6.5.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wiring and Terminals)
All wiring harnesses over 5 feet long and containing at least 5 wires shall include 20 per cent excess wires for spares that are the same size as the largest wire in the harness excluding the battery cables.

New Flyer's Deviation/Clarification:

New Flyer provides 10% spare wiring in each harness with the exception of the engine compartment and the maximum size of spare provided is 14 gauge.

Rationale (Pros & Cons):

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Deviation #: 113 Proposer: New Flyer of America

RFP #: 4000 Page: 229 Section: 5.3.6.5.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wiring and Terminals)
All coach wiring shall be 16 gauge minimum; exceptions will be granted for communication and multiplex control wiring.

New Flyer's Deviation/Clarification:

New Flyer uses 18 gauge wires for low current applications of suitable amperage.

Rationale (Pros & Cons):

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Deviation #:	108	Proposer:	New Flyer of America
RFP #:	4000	Page: 224	Section: 5.3.6.4.2

Complete Description of Deviation:

Port Authority Specification Requirement:

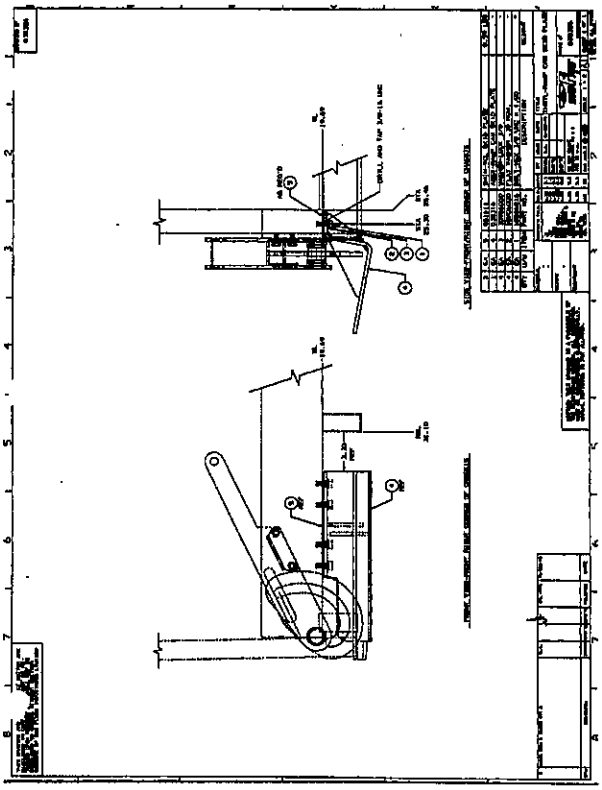
(Front Bumper)
A skid plate under the full width of the bumper shall be provided to protect the wheelchair ramp. This shall be a ¼ inch plate, mounted at a 45° angle.

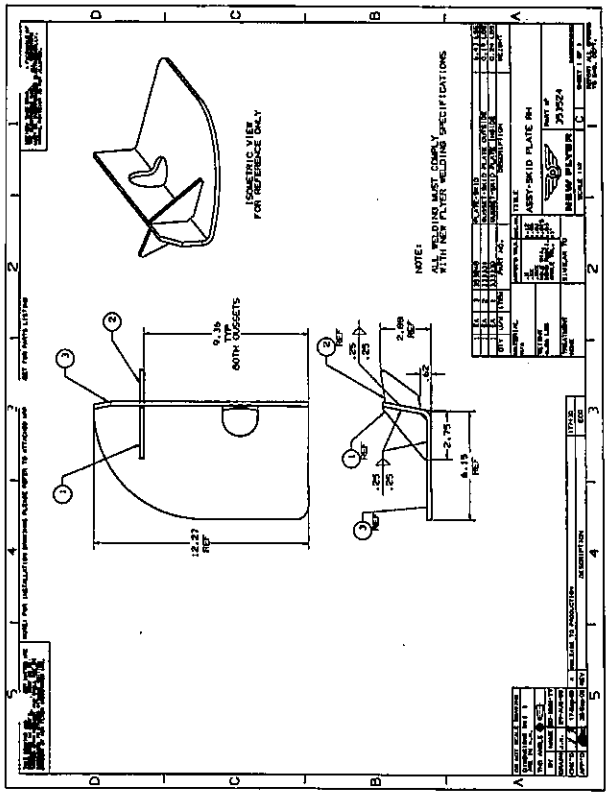
New Flyer's Deviation/Clarification:

New Flyer installs the skid plate on curbside front of the bus covering the wheelchair mechanism. It is not installed to the full width of the bumper.

Rationale (Pros & Cons):

Please refer to the attached documentation.





RFP NO. 4000

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Deviation #:	109	Proposer:	New Flyer of America
RFP #:	4000	Page: 226	Section: 5.3.6.5.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

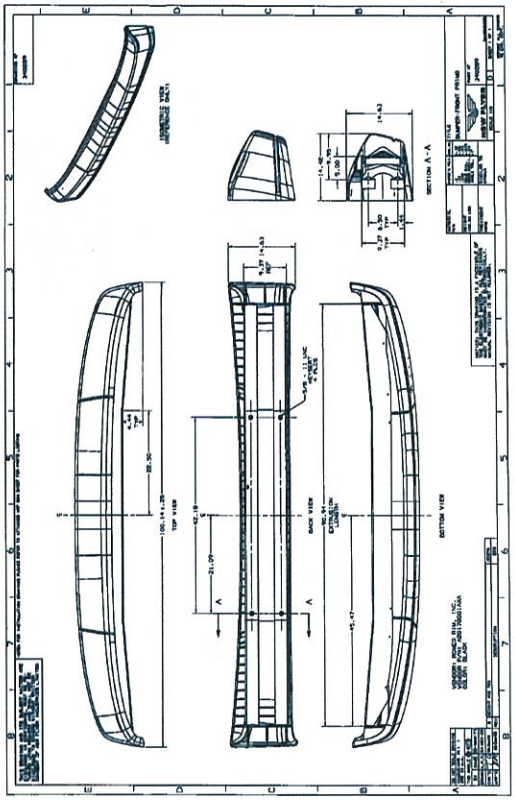
(Distributed Intelligent Network System (DINEX))
The electrical control and wiring system shall be I/O Controls DINEX G3 Multiplex System or Approved Equal.

New Flyer's Deviation/Clarification:

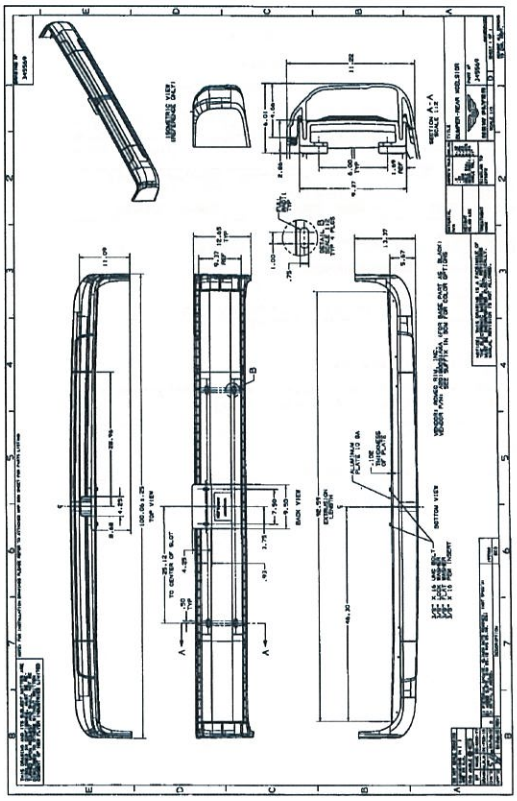
New Flyer offers the Parker/Vansco VMM programable logic control (PLC), multiplexing system. New Flyer introduced PLC to the bus industry in 1993. Vansco today offers the most sophisticated software and components in the market today.

Rationale (Pros & Cons):

Please refer to the following documentation for product information for Vansco's features and benefits.

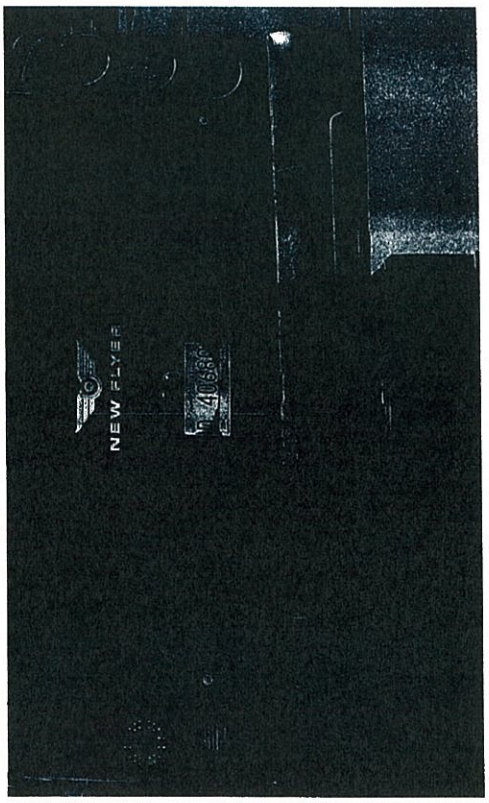


298 EXHIBIT #2 [DEVIATIONS]



299 EXHIBIT #2 [DEVIATIONS]

300 EXHIBIT #2 [DEVIATIONS]



301 EXHIBIT #2 [DEVIATIONS]

RFP NO. 4000

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Deviation #: 106 Proposer: New Flyer of America

RFP #: 4000 Page: 223, 209 Section: 5.3.6.2.3, 5.3.1.2.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Fuel Lines, Service)
The fuel lines shall be stainless steel or Approved Equal tubing in compliance with all regulations regarding fuel lines.

Fuel and oil lines within the engine
compartment shall be rigidly supported and shall be composed of stainless steel tubing except in locations where the flexible lines are specifically required.

New Flyer's Deviation/Clarification:

New Flyer utilizes diesel grade nylon fuel lines running from the fuel tank to the engine bulkhead and stainless steel and GH100 hose combination lines in the engine compartment.

Rationale (Pros & Cons):

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Deviation #: 107 Proposer: New Flyer of America

RFP #: 4000 Page: 224 Section: 5.3.6.4.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(BUMPER SYSTEM)
Bumpers shall be Romeo Rim Help 'S' type or Approved Equal and shall provide impact protection for the front and rear of the coach up to 26 inches above the ground.

Both front and rear bumpers shall utilize bolt brackets (consisting of bolts welded to a piece of flat bow stock) to facilitate easy removal and reinstallation of bumpers.

The rear bumper or bumper extensions shall be shaped to preclude unauthorized riders standing on the bumper and shall wrap around the coach to protect the engine compartment doors and radiator. The bumper extensions shall not hinder service and shall be flared to the coach body with no protrusion or sharp edges.

New Flyer's Deviation/Clarification:

The 35' and 40' bus front bumpers provide an impact protection with the top of the bumper being 24" inches above the ground at center and 26.5" at the ends.

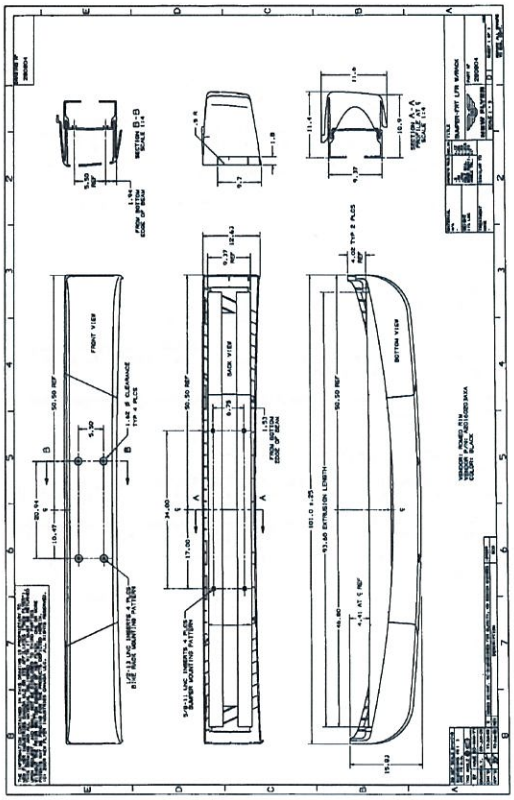
The 60' bus front bumper provides an impact protection with the top of the bumper being 24" inches above the ground

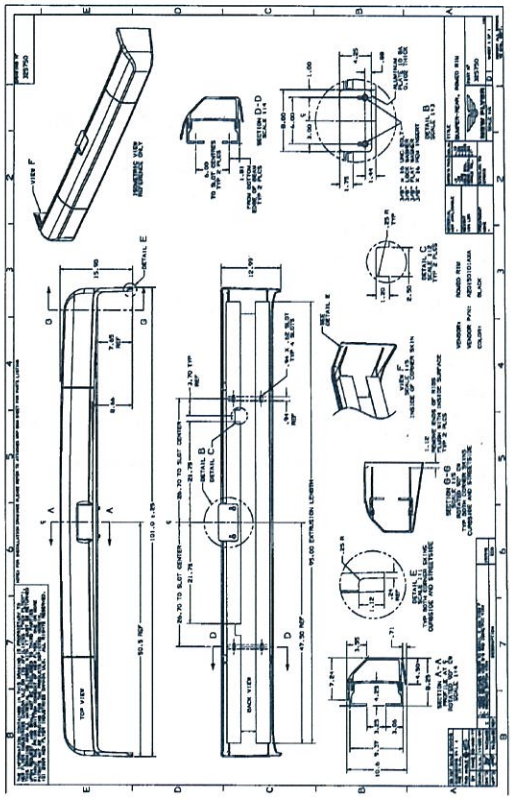
The Romeo Rim Help bumpers are tapped, and the threaded fasteners are fixed to the bumper beam to facilitate easy removal and re-installation.

Please note that on our bus design bumpers are not extended on sides.

Rationale (Pros & Cons):

Please refer to the attached documentation.





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Deviation #: 102 Proposer: New Flyer of America

RFP #: 4000 Page: 221 Section: 5.3.5.1.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Air System)
Two (2) "quick disconnect" fittings shall be provided, one (1) in the engine compartment and one (1) accessible from the front of the bus. Both connections shall also incorporate a John Brooks Co. Part #25-4F-4FBT manual "shut-off" valve. The line from the quick disconnects to the main air tank shall have a minimum i.d. of 3/8-inch.

New Flyer's Deviation/Clarification:

New Flyer provides check valves to maintain the system liability. The line from the quick disconnects to the main air tank has a minimum inner diameter of 1/4" inch.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 103 Proposer: New Flyer of America

RFP #: 4000 Page: 221 Section: 5.3.5.1.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Air System)
For the purpose of towing, front "quick disconnect" fitting shall be a "female" Schrader #5139-11 or Approved Equal.

Rear "quick disconnect" fitting shall be a "male" Schrader #5138-11 or Approved Equal.

Piping at front and rear shall permit bus to bus air filling

New Flyer's Deviation/Clarification:

New Flyer will meet the functionality with Male H2C connections at front and rear. New Flyer bus design cannot accommodate specified 5139-11 and 5138-11 connections.

Bus to bus air filling feature is not available on our buses. This is applicable to the air starting systems while our buses are equipped with electric starters.

Rationale (Pros & Cons):

Clarified during 6/10/2010 teleconference:

New Flyer will supply and install proper tow truck fittings on bus upon delivery.

RFP NO. 4000

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Deviation #: 104 Proposer: New Flyer of America

RFP #: 4000 Page: 222 Section: 5.3.5.1.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Air Dryer)
A twin, alternating desiccant tower air dryer or Approved Equal shall be used to prevent accumulation of moisture in the air system. The air dryer shall be mounted in the middle of the bus. All lines shall be sloped down towards the air dryer.

A check valve shall be installed in the air system between the air dryer and wet tank to prevent air loss in the system.

New Flyer's Deviation/Clarification:

New Flyer is proposing the only commercially available alternating desiccant tower dryer model QBA-60 from Graham-White.

The check valve is part of the air dryer and dryer is mounted behind the rear axle on the streetside of the vehicle.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 105 Proposer: New Flyer of America

RFP #: 4000 Page: 222, 208 Section: 5.3.6.1.1, 5.3.1.1.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wheels, Top Speed)
Wheels shall be compatible with
12R22.5 tubeless load range H tires in size and load-carrying capacity.

An aluminum based Never Seize compound or Approved Equal shall be used between the steel hub/brake drum assembly and the aluminum wheel. Valve core extensions shall be provided to facilitate servicing from the side of the coach.

The coach shall be capable of a top speed of at least 65 mph on a straight, level road at SLW with all accessories operating.

New Flyer's Deviation/Clarification:

New Flyer buses can only utilize 305/70R22.5 tires. As the Port Authority is supplying the tires under a pre-existing lease agreement, please keep the 65mph rated speed requirement in mind.

New Flyer does not recommend never seize compound as we consider the steel hub/brake drum assembly and aluminum wheel joint as critical joints that cannot have a slippage risk.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 98 Proposer: New Flyer of America

RFP #: 4000 Page: 220 Section: 5.3.5.1.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Friction Material)
Brake shoes shall be of 16.5", two (2) shoe design, cast, heavy duty type to assure uniform pressure and constructed so as to last the life of the vehicle.

New Flyer's Deviation/Clarification:

The 60' bus brake drums are 16.14" inch in diameter.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 99 Proposer: New Flyer of America

RFP #: 4000 Page: 221 Section: 5.3.5.1.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Air System)
Other lines necessary to maintain system reliability shall be flexible Parker "213" hose. End fittings shall be standard SAE or JIC brass or steel, flanged reusable, swivel type fittings.

New Flyer's Deviation/Clarification:

New Flyer utilizes Aeroquip FC355 flexible hoses for most applications and a limited number of air brake lines are Weatherhead conforming to SAE J1402a Type A.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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Deviation #: 100 Proposer: New Flyer of America

RFP #: 4000 Page: 221 Section: 5.3.5.1.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Air System)
All air reservoirs shall meet the requirements of SAE Standard J10 and shall be equipped with clean-out plugs. Drain valves shall be guarded or flush type.

New Flyer's Deviation/Clarification:

The air reservoirs on our vehicles are mounted in the roof structure making plugs and drain valves impractical on all reservoirs. The clean-out plugs are not recommended on low floor buses due to tank location and are not provided.

New Flyer will supply five (5) drain valves conveniently located at the lower edge of the vehicle.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 101 Proposer: New Flyer of America

RFP #: 4000 Page: 221 Section: 5.3.5.1.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Air System)
Drain valves shall be a John Brooks Co. Part #25-4F-4FBT or Approved Equal.

New Flyer's Deviation/Clarification:

New Flyer buses are equipped with Bendix drain valves.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 94 Proposer: New Flyer of America

RFP #: 4000 Page: 219 Section: 5.3.5.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service and Emergency Brakes)
All brake chambers shall be MGM LTR-T, Transit Model with 3 inch long stroke.

New Flyer's Deviation/Clarification:

The 35' and 40' buses are equipped with MGM type 20 front brake chambers and MGM MJB 2024ET753 rear brake chambers while the 60' buses are equipped with MJS3024 brake chambers.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 95 Proposer: New Flyer of America

RFP #: 4000 Page: 219 Section: 5.3.5.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service and Emergency Brakes)
Unless otherwise specified all brake system components shall be manufactured by Bendix-Westinghouse or Approved Equal.

New Flyer's Deviation/Clarification:

Please note that the relay valve and ABS are supplied by Wabco.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 96 Proposer: New Flyer of America

RFP #: 4000 Page: 219 Section: 5.3.5.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service and Emergency Brakes)
Rear actuators for service brakes shall be MGM LTR-L3 30/30 or MGM LTR-L3 30/36. All anchor pins and hardware shall be coated with Anti-seize.

New Flyer's Deviation/Clarification:

The 40' buses are equipped with M.A.N. axles that incorporate an MGM MJB 2024 piston on the spring brake, while the 60' buses are equipped with M.A.N. axles that incorporate and MGM MJS3024 piston on the spring brake.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 97 Proposer: New Flyer of America

RFP #: 4000 Page: 219 Section: 5.3.5.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service and Emergency Brakes)
In an emergency, the parking brakes shall be capable of bringing the coach to a stop from a speed of 20 miles per hour at a deceleration rate equivalent to a stop within eighty-five (85) feet with a seated passenger load.

New Flyer's Deviation/Clarification:

New Flyer would like to point out that the parking brake is not the primary emergency stopping mode of a modern bus with a dual circuit brake system. The test for the FMVSS 121 (49 CFR - S 571.121) requirement for emergency stopping performance is conducted by failing (draining) one of the two service reservoirs, which represents a single point air system failure, and can utilize components of the spring brake parking system, depending on which reservoir is failed. This FMVSS 121 emergency stopping requirement (85 feet from 20 mph and 613 feet from 60 mph) must be met at both LLVW (Lightly Loaded Vehicle Weight) and GVWR (Gross Vehicle Weight Rating), and New Flyer does test to and meet these requirements on all its vehicles. There is no federal requirement for parking brake performance under dynamic conditions, only under static conditions (20% grade holding or drawbar pull). New Flyer also meets the static parking brake performance requirements. New Flyer has not tested a park brake application at seated load. We do, however, meet all FMVSS 121 requirements for service and parking brakes at both load conditions stated in the regulation.

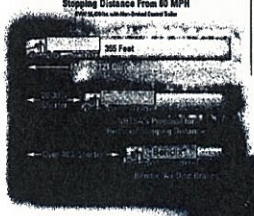
Rationale (Pros & Cons):

Shorter stopping distances.

From 60 mph, a typical 66,470 lb. GVW tractor equipped with Bendix® air disc brakes and coupled to a control trailer (non-braked) will stop more than 40% shorter than the current 355-foot federal requirement of FMVSS 121.

What's more, with air disc brakes, drivers gain immeasurable peace of mind knowing they will always have the braking force needed to stop safely or negotiate a grade.

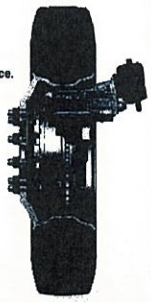
Stopping Distance From 60 MPH



Dramatically reduced downtime during service.

Changing air disc brake pads takes less than half the time it typically takes to change drum linings, reducing downtime and labor costs.

Every component has been engineered to provide a longer service life. This means drivers spend less time waiting around for service – and more time driving, providing significant savings in maintenance, labor, and downtime.



Advanced engineering from the industry leader

Reduced part number complexity and component proliferation.

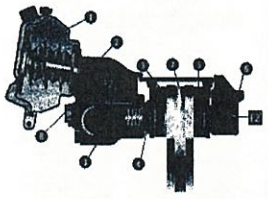
With Bendix® air disc brakes, the same size brake unit can be used on all axles. Traditional brake designs require different components on the steer, drive, and trailer axles, increasing the number of different parts required to fully service the brake system. Bendix air disc brakes mean there are fewer parts to buy, fewer parts to stock, and fewer brake inventory management decisions to make.

Design Characteristics	Feature	Bendix Air Disc Brake Advantage
Brake Size	22.5"	Designed to fit most truck wheel-end envelopes and offer drivers top performance.
Available Brake Torque	Up to 15,000 ft. lbs.	Complete range of application coverage.
Adjustment	Dual Synchronized	Increased performance, stability, and safety.
Caliper Construction	Mono-block Construction	More compact than competitive caliper models. The mono-block design provides better sealing and better protection from the external environmental elements.
Unit Weight	79 lbs.	Lighter [illegible] available.
Pad Wear Volume	43.26 cu. in.	[illegible] service intervals.
Pistons	Dual Pistons	Even force distribution, more even pad wear, reduced heat, noise elimination.
Wear Sensing	Three Available Configurations	Optimizes pad and rotor service life to help reduce maintenance costs and downtime.
Caliper Guidance	Two-pin Design	More stringent overall dimensional accuracy. Two-pin design uses fewer components.

The compact mono-block design provides excellent sealing and protection.

Bendix® Air Disc Brakes – Models ADB22X,™ SN7,™ SN6,™ and SK7™:

1. Pneumatic brake chamber forces the pushrod against the lever with force A.
2. Eccentric lever multiplies force A and applies force B to beam.
3. Beam transmits force B to a pair of threaded tubes and tappets.
4. Dual tappets spread force B evenly across surface of inner brake pad.
5. Sliding caliper distributes forces B and B equally between inboard and outboard brake friction pad.
6. Special brake pads, made of a carefully selected blend of materials for high stopping power and long life, apply forces B and B to rotor.
7. Heavy duty ventilated rotor is specifically designed to minimize heat distortion and optimize thermal stress endurance. As pads grip rotor, vehicle decelerates.
8. These wear sensors provide a continuous voltage signal that indicates pad and rotor condition.



Your Single Complete Source.

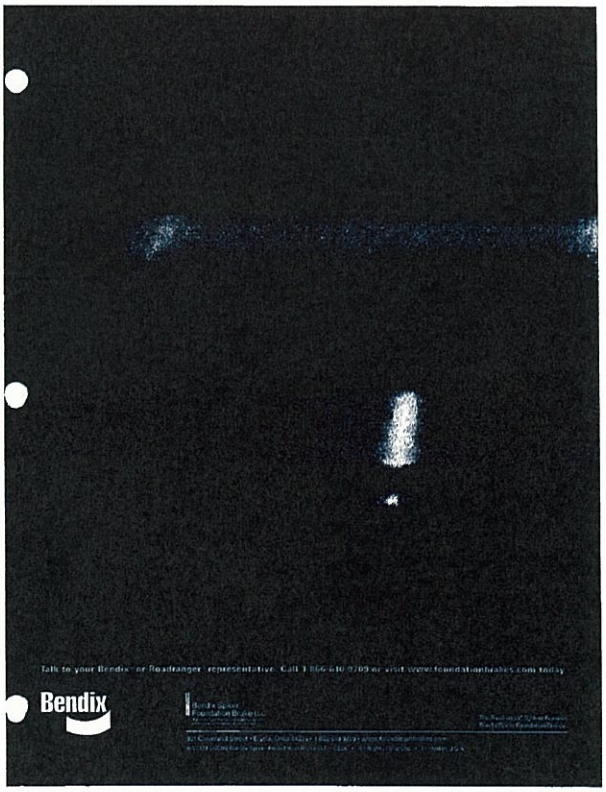
You may know our products and heritage as Dana,® Eaton,® Spicer,® or simply Bendix.® Names you've come to trust for world-class performance, quality, and superior support. Today, that legacy of foundation brake superiority continues under one brand name – Bendix® – as a part of Bendix Spicer Foundation Brake LLC.

From sales and service professionals you deal with face-to-face – including both Bendix and Roadranger® representatives, part of our extensive field network – there is an entire team working behind the scenes to produce top quality, high performing products for you.

From R&D to engineering, from production to quality control and on-time distribution, rest assured you have the full support of an industry leader at work for you. Plus, we stand behind our products with complete warranty protection from one of the best programs in the industry.

One out of every three North American commercial vehicles manufactured today is built with Bendix® foundation brakes.

Many top fleets spec only our brakes both on their new trucks and trailers, as well as for their all-makes replacement parts. Bendix Spicer Foundation Brake is your complete source for brake design, manufacturing, hardware, and support for foundation brake solutions, actuation systems, and components.



Bendix

Bendix Air Disc Brakes

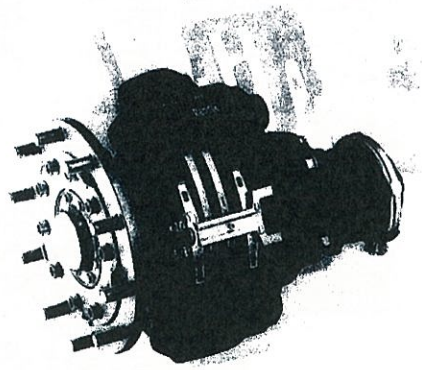
Optimum Performance. Optimum Engineering.

Bendix Spicer Foundation Brake LLC

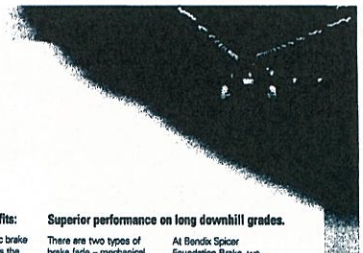
AIR DISC BRAKES

A major breakthrough in safety, performance, and productivity

Bendix® brand air disc brakes from Bendix Spicer Foundation Brake LLC offer safety, performance, and productivity – plus driver peace of mind – even under the toughest braking conditions. And the enhanced design means straighter, smoother stops.



Advanced engineering provides significantly longer brake system life.



Not all disc brakes are the same.

Created from the power and expertise of global R&D and precision design, our air disc brakes offer a two-pin floating caliper design that balances wheel packaging and reliability. This unique two-pin design utilizes fewer components than four-pin air disc brakes. The decreased number of components provides more stringent overall dimensional accuracy, consistent force distribution, and longer brake system life.

Dual, internally adjusted pistons allow the Bendix® ADB22X® air disc brake to offer the most precise brake adjustment, better force distribution, and more even pad wear than any single piston caliper design. In addition, the Bendix® ADB22X® brake is the lightest dual piston design available.

Other key benefits:

- Internal automatic brake adjustment allows the brakes to always be in a state of optimum adjustment.
- Virtually no brake fade and no degradation in stopping power.
- Straight, stable stops due to minimized brake force variation between brakes.
- Optional integrated pad- and rotor-wear sensing optimizes pad and rotor life and minimizes the number of required maintenance checks.
- Optimized friction pairing results in minimal fade and maximized pad and rotor life.
- Global reach and expertise. Bendix Spicer Foundation Brake, Bendix, and its German affiliate, Knorr-Bremse, have more than 10 million air disc brakes in service worldwide and produce nearly 2 million air disc brakes annually.

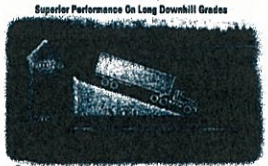
Superior performance on long downhill grades.

There are two types of brake fade – mechanical and friction. In an air disc brake, as heat builds up, the rotor expands toward the pads, thus significantly removing mechanical fade from the equation.

With the Bendix® ADB22X® air disc brake, brake fade is nearly eliminated by optimizing the friction couple.

At Bendix Spicer Foundation Brake, we developed the metallurgy in our 17-inch rotor and paired it with our advanced friction material specifically designed to optimize friction performance at high temperatures, thus significantly reducing brake fade and maximizing brake pad and rotor life. As a result, there is virtually no degradation in stopping power when brake temperatures rise under heavy use.

Superior Performance On Long Downhill Grades



Compact design minimizes weight and maintenance.

Bendix air disc brakes feature a mono-block caliper design, which makes the brake more compact than two-piece caliper designs. The mono-block design also offers better sealing from the environment for better protection from the elements. Engineered to fit most truck wheel-end envelopes, Bendix air disc brakes offer commercial vehicle drivers top performance, durability, and long life.

Stopping power that is smooth, straight, and safe

Constant brake pedal effectiveness and passenger car-like feel.

As a result of an optimized friction couple, Bendix® air disc brakes maintain their effectiveness in severe driving situations. This results in brake pedal forces that do not vary dramatically, providing the driver with a passenger car-like feel.

Bendix air disc brakes are preferred by virtually all drivers who have experienced their performance, stability, and feel. This can aid in driver retention and recruiting, and also extends added value throughout the entire operation for a fleet that runs on Bendix® air disc brakes.

Brake Pedal Force

Improved drivability and feel in severe braking conditions

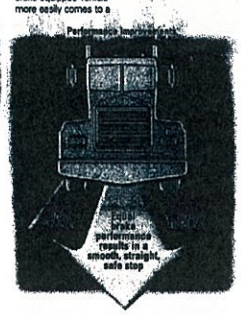
Greater stability during stops.

Bendix air disc brake technology dramatically improves in-line braking stability. Our air disc brake system's inherent high efficiency (95%) and low hysteresis (<10%) mean there is a negligible difference between the left side and right side performance, and that brake force is being applied and maintained efficiently to all air disc brake wheel-ends.

The result? The air disc brake equipped vehicle more easily comes to a straight, stable stop. The right to left side brake performance of other brake designs can vary up to three times as much, making steering corrections necessary to keep the vehicle on its intended path.

With consistent brake performance, a vehicle using Bendix air disc brakes at all wheel-ends also benefits from improved overall brake balance.

Performance Improvement Cycle



Dual synchronized pistons provide even force distribution, resulting in more even pad wear, reduced heat, and noise elimination

RFP NO. 4000

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Deviation #: 90 Proposer: New Flyer of America

RFP #: 4000 Page: 215-216 Section: 5.3.2.1, 5.3.2.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(FRONT AXLE, REAR AXLE)
The front axle shall be a Meritor conventional reverse Elliot-type (or Approved Equal) with tubular steel or "I" beam axle center. The front axle shall be non-driving with a load rating sufficient for the coach loaded to GVWR. Wheel hubs shall be carried on two opposed tapered roller bearings. The upper front axle radius rod shall incorporate a threaded caster adjusting clamp or shim pack to permit caster adjustment without removal of the radius rod from the coach.
Front axle wheel bearings shall incorporate suitable oil hubs with fill plugs located on the outboard end of each hub.

The rear axle shall be a Meritor 71000 Series, or Approved Equal, single full floating, heavy-duty axle

New Flyer's Deviation/Clarification:

New Flyer's 60' bus is equipped with a M.A.N axle model V8-65L for the front and a M.A.N planetary rear axle model HP-1352, equipped with a gear ratio of 5.44:1.

Please note, there is no provision provided for caster adjustment and the rear axle is a single cast piece. The front bearings are grease lubricated.

Rationale (Pros & Cons):

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Deviation #: 91 Proposer: New Flyer of America

RFP #: 4000 Page: 216 Section: 5.3.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(SUSPENSION)
The suspension system shall permit a minimum wheel travel of 3.5 inches in jounce and three-(3) inches in rebound.

New Flyer's Deviation/Clarification:

On proposed 60-ft bus design, the suspension system permits wheel travel of 3.0 inches in jounce.

Rationale (Pros & Cons):

Please note that this feature is inherent to our proposed 60-ft bus design.

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Deviation #: 92 Proposer: New Flyer of America

RFP #: 4000 Page: 217 Section: 5.3.3.2.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Kneeling)
A driver-actuated kneeling device shall lower the coach during loading or unloading operations, regardless of load, to a first step height of 11.5 inches measured at the longitudinal centerline of the front door.

New Flyer's Deviation/Clarification:

The kneeling system on our 60' bus design lowers the coach to a front step height of 13.0" inches measured at the longitudinal centerline of the front door.

Rationale (Pros & Cons):

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Deviation #: 93 Proposer: New Flyer of America

RFP #: 4000 Page: 219 Section: 5.3.5.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service and Emergency Brakes)
Service braking shall be S-CAM type and applied by four (4) wheel internal expanding air operated brakes.

Slack adjusters provided for S-CAM brakes shall be Haldex automatic or Approved Equal.

New Flyer's Deviation/Clarification:

The 35' and 40' buses are equipped with disc brakes and slack adjusters are not required on disc brake equipped axle designs.

Rationale (Pros & Cons):

Please note that this feature is Not Applicable 5-ft bus design.

Drum brakes are proposed on rent to the 60-ft bus design.

Please refer to the attached documentation.

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Deviation #: 86 Proposer: New Flyer of America

RFP #: 4000 Page: 213 Section: 5.3.1.3.3, 5.3.1.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Transmission, Engine)
The receptacle for the diagnostic reader shall be located in the compartment above the driver's window. This shall be the 9 pin round type receptacle separate and distinct from the engine reader receptacle.

The receptacle for the diagnostic reader shall be located in the compartment above the driver's window.

New Flyer's Deviation/Clarification:

The diagnostic reader receptacles on our 40' and 35' design are located inside the secure diagnostic station (SDS) box.

On 60-ft bus, the diagnostic reader receptacles are located behind the driver's seat.

Rationale (Pros & Cons):

Clarified during 6/7/2010 teleconference;

The location of the diagnostic reader receptacles will be in the area of the drivers compartment, in a location mutually agreed between Port Authority an d New Flyer.

RFP NO. 4000

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Deviation #: 87 Proposer: New Flyer of America

RFP #: 4000 Page: 213 Section: 5.3.1.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Transmission)
The transmission oil cooler shall be constructed to permit complete disassembly for cleaning.

New Flyer's Deviation/Clarification:

The Port Authority specified Voith transmission comes equipped with an internal oil filter.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 88 Proposer: New Flyer of America

RFP #: 4000 Page: 214 Section: 5.3.1.3.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Drive Shaft
)
The drive shaft shall be a 3½-inch diameter, heavy duty Spicer "Glide Coat" 1710 Series, or Approved Equal

New Flyer's Deviation/Clarification:

New Flyer buses utilize a 1710 series propeller shaft supplied by All Power Transmission.

Rationale (Pros & Cons):

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Deviation #: 89 Proposer: New Flyer of America

RFP #: 4000 Page: 215-216 Section: 5.3.2.1, 5.3.2.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(FRONT AXLE, REAR AXLE)
The front axle shall be a Meritor conventional reverse Elliot-type (or Approved Equal) with tubular steel or "I" beam axle center. The front axle shall be non-driving with a load rating sufficient for the coach loaded to GVWR. Wheel hubs shall be carried on two opposed tapered roller bearings.
Front axle wheel bearings shall incorporate suitable oil hubs with fill plugs located on the outboard end of each hub.

The rear axle shall be a Meritor 71000 Series, or Approved Equal, single full floating, heavy-duty axle. Axle shall incorporate a Unitized Wheel End containing seals, bearings and shall utilize oil hubs with fill plugs located on the outboard end of each hub, all pre-loaded in a single unitized hub assembly.

New Flyer's Deviation/Clarification:

New Flyer's 35' & 40' buses are equipped with a M.A.N axle model VOK-07-F for the front and a M.A.N single reduction rear axle model HY-1336-F equipped with a gear ratio of 4.625:1. The front and rear axle bearings are grease lubricated, which is maintenance free and lubed for life.

These axles are equipped with front and rear disc brakes, which greatly reduce the life-cycle operating costs associated with drum brake applications.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 82 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
The radiator shall be manufactured to the following specifications. The engine jacket water radiator core section must have a hydrogen brazed or mechanically bonded flat to round tube to header joint and be of plate fin construction. Tubes must be of red brass with a minimum of 0.012 inch wall thickness and fins of 0.0035 inch 3/4 hard copper with both front and back leading edges hemmed to 0.007 inch. Fin density may not exceed a maximum of 10 fins perinch, and fins must be a flat dimpled (or bumped) type design. Headers must be a minimum of 3/8 inch thick boiler plate steel with either bolted or welded tank construction. Radiators of welded tank construction are only acceptable with a 12-year warranty.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing the radiator and charge air cooler manufactured by Thermasys as an alternator system. The radiator uses a welded tank with brazed aluminum fins and tube construction. The radiator core section have Nocoloc (CAB) brazed aluminum tube to header joint with serpentine fin construction, Dimpled Akminum tubes .0780X1.260, .0157 wall thickness, fin density: 8 FPI, thickness: .006".

Rationale (Pros & Cons):

New Flyer selected this radiator after consulting with all suppliers. The Thermasys package provided the best cooling output, and also lowered the weight increases associated with EPA2010 compliant configurations.

[BAFO -Deviation]

RFP NO. 4000

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Deviation #: 83 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
Charge air cooler may be of hydrogen brazed or mechanically bonded construction with a maximum fin density of 10 non-louvered fins per inch. Fin material is to be 0.0035 inch thick ¾ hard copper hemmed (both sides) to 0.007 inch.

New Flyer's Deviation/Clarification:

The Charge Air Cooler's core have Nocoloc brazed aluminum Tbar with serpentine fin construction, extruded aluminum tubes 5.50" deep, fin density: 8 FPI, thickness: .009".

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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Deviation #: 84 Proposer: New Flyer of America

RFP #: 4000 Page: 212-213 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
The total fan horsepower draw for the cooling system including radiator, charge air cooler, oil cooler shall not exceed 10% of maximum rated engine horsepower. Fan blade tip speed may not exceed 14,000 feet/minute. Fans may not be driven continuously. Fan must be controlled by the engine computer. Radiator shutters shall not be used.

New Flyer's Deviation/Clarification:

The cooling system design and fan size are designed and dependent upon the engine rating, bus length and cooling requirements of 2010 EPA compliant engines. Fan horsepower account for up to 14% of the rated engine power and maximum fan speed is less than 16,000 ft/min, which occurs at less than 1% of time.

Coolant fan turns constantly in an idle mode and increases speed accordingly as the demand for cooling increases. Having fans turns constantly helps engine compartment heat rejection.

The thermostatic fan drive system is a hydraulic system, which thermostatically controls the fan speed as a function of engine coolant temperature. A feature of the system is that the fan is controlled by the engine temperature and not solely by engine speed as with direct drive mechanical fans.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 85 Proposer: New Flyer of America

RFP #: 4000 Page: 213 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
Coach manufacturer shall test the radiator and other cooling system components to insure that they meet the requirements of the engine manufacturer and Port Authority. Engine manufacturer and Port Authority must be present during the test.

New Flyer's Deviation/Clarification:

New Flyer has completed the Port Authority requested testing on the EPA 2010 platform and Cummins has approved this system set-up.

In lieu of re-testing this requirement, we would like to propose that we supply a copy of the application approval to The Port Authority for review and approval. If this is not acceptable, New Flyer will need to re-review both our proposed delivery schedule and pricing for possible changes.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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Deviation #: 78 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
The cooling system shall be sized to maintain fluids at safe, continuous operating temperatures during the most severe operations possible with the coach loaded to GVWR and with ambient temperatures up to 125° F.

New Flyer's Deviation/Clarification:

The cooling system is sized to maintain fluids at safe, continuous operating temperatures during the most severe operations possible with the coach loaded to GVWR and with ambient temperatures up to 120° F.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 79 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
All valves in water system shall be ¼ turn lever-type, not gate valves.

New Flyer's Deviation/Clarification:

All valves in water system are ¼ turn ball valves on proposed New Flyer's buses.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 80 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
The engine cooling systems shall be equipped with a Need Release disposable spin-on coolant filter or Approved Equal.

New Flyer's Deviation/Clarification:

New Flyer is proposing a Cummins supplied spin-on type with one time release corrosion inhibitor additive feature.

Rationale (Pros & Cons):

This is a Cummins approved coolant filter option.

RFP NO. 4000

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Deviation #: 81 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
A spring-loaded, all brass, push-button type valve to release pressure or vacuum safely in the cooling system shall be provided.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing a lever type safety release valve in lieu of a spring-loaded push button. Based on the past experience, lever type safety release valve is more reliable than push button type.

Rationale (Pros & Cons):

Revised based on 6/10/2010 teleconference:

New Flyer will provide the push-button type pressure relief valve as specified.

RFP NO. 4000

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Deviation #: 74 Proposer: New Flyer of America

RFP #: 4000 Page: 211 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
Unless otherwise approved, the jacket water radiator, charge air cooler, and oil cooler must be a side-by-side configuration or separate independently mounted core matrixes.

New Flyer's Deviation/Clarification:

For proposed Alternate Cooling system (standard hydraulically driven cooling system)

The 35' and 40' buses are equipped with a charge air cooler and oil cooler design that is integrated with our Thermasys radiator. They are stacked on top of the radiator.

The 60' bus is equipped with a charge air cooler that is integrated with our Thermasys radiator and is stacked on top of the radiator. The oil cooler is remotely located.

Rationale (Pros & Cons):

[BAFO -Deviation]

RFP NO. 4000

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Deviation #: 75 Proposer: New Flyer of America

RFP #: 4000 Page: 211 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
Engine jacket water radiators must be sized so as to maintain a 210 degree Fahrenheit radiator top tank temperature at an outside ambient of 125 degrees Fahrenheit with a 10% fouling factor utilizing a 50-50 mixture of ethylene glycol and water without the use of alternate engine control devices (AECD).

New Flyer's Deviation/Clarification:

The Thermasys radiator is sized to maintain a 225 degrees Fahrenheit top tank temperature at an outside ambient temperature of 120 degrees Fahrenheit. At the test stage, the fan is derated by 22% to account for any fouling or flow obstruction utilizing a 50-50 mixture of ethylene glycol and water without the use of alternate engine control devices (AECD).

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

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Deviation #: 76 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
Engine jacket water radiator must also be seized to meet retarder heat load at an outside ambient of 125 degrees Fahrenheit.

Retarder heat load will be calculated by taking the average heat load and engine rpm created by the retarder from a 55 mph to zero mph stop within 20 seconds, or less, utilizing the retarder only on a level surface. One hundred (100) 0 to 55 mph to 0 continuous stop and go cycles must be performed utilizing the retarder only for deceleration in accordance with the preceding criteria to verify compliance with this specification.

New Flyer's Deviation/Clarification:

The engine jacket water radiator is sized to meet retarder heat load at an outside ambient temperature of 120 degrees Fahrenheit.

The retarder heat load is performed in accordance with the transmission manufacturer's test, which is from 0 to 30-mph speed.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 77 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
The system shall maintain a maximum oil temperature of 185 degrees Fahrenheit at 125 degrees Fahrenheit outside ambient temperature at maximum hydraulic system output.

New Flyer's Deviation/Clarification:

The hydraulic system is designed to handle maximum temperature of 220 degrees Fahrenheit.

Rationale (Pros & Cons):

Clarified during 6/10/2010 teleconference:

New Flyer will provide TS295 Transynd fluid as hydraulic fluid.

RFP NO. 4000

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Deviation #: 72		Proposer:	New Flyer of America
RFP #: 4000	Page: 211	Section:	5.3.1.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Engine)
Air supplied to the engine shall be processed through a Donaldson Air Cleaner and Filter Part Number 13140044 Element Number P181015 or Approved Equal. Metal air inlet piping shall be 12 gauge, minimum thickness.

New Flyer's Deviation/Clarification:

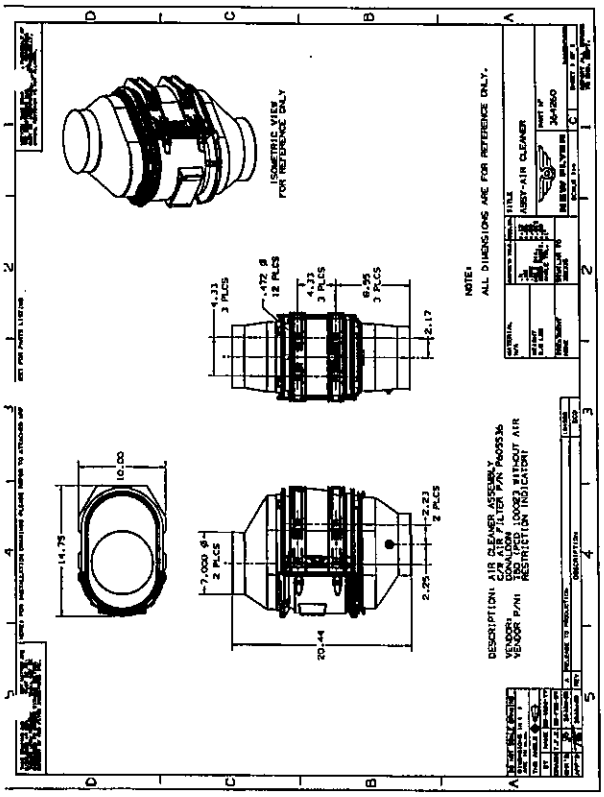
A Donaldson air Cleaner Assembly with Filter part number P605536 is provided on all 35' and 40' buses.

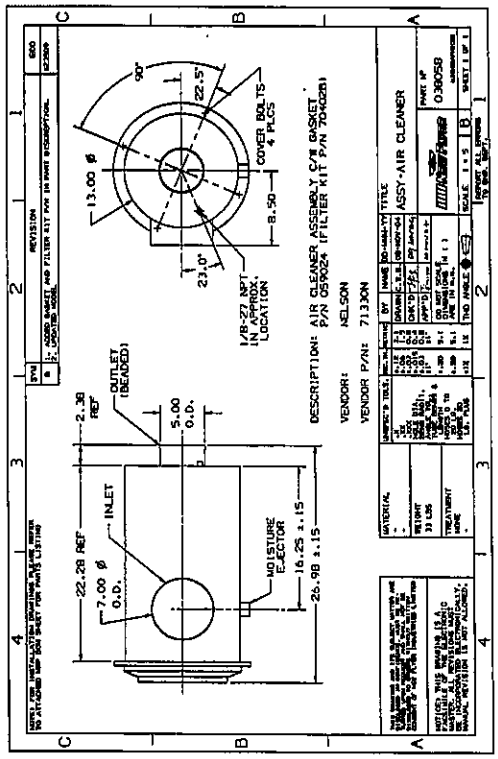
A Nelson air Cleaner part number 059024 with filter part number 704028 is provided on all 60' buses.

Please note that air inlet piping is 16 gauge in lieu of specified 12 gauge. New Flyer does not recommend 12 gauge piping as it increases the overall bus weight.

Rationale (Pros & Cons):

Please refer to the attached documentation.





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Deviation #: 73		Proposer:	New Flyer of America
RFP #: 4000	Page: 211	Section:	5.3.1.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Engine)
The engine shall be equipped with an oil level dipstick that allows checking of oil level with engine running and with engine stopped.

New Flyer's Deviation/Clarification:

The engine oil level dipstick allows checking of the oil level with engine static condition only.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #:	69	Proposer:	New Flyer of America
RFP #:	4000	Page: 209	Section: 5.3.1.2.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service)
Five (5) sealed type service lights, the same type as the LED reverse lights shall be provided in the engine compartment.

New Flyer's Deviation/Clarification:

The 35' and 40' buses are equipped with LED lights supplied by J.W. Speaker Corporation.

The 60' buses are equipped with Dialight LED lights, which are 2.5" inches in diameter.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #:	70	Proposer:	New Flyer of America
RFP #:	4000	Page: 210	Section: 5.3.1.2.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service)
Flexible lines shall be Aeroquip "300" hose except in applications where premium pressure hoses are required, and shall have standard SAE or JIC brass or steel, reusable swivel end fittings. Swivel end fittings for line sizes 4, 5, 6, and 8 shall be SAE 45 degrees. Swivel end fittings for line sizes 10 and above shall be JIC 37 degrees. If manufacturer uses hoses or fittings other than the specified, all tooling necessary to repair and replace shall be provided.

New Flyer's Deviation/Clarification:

All New Flyer buses utilize flexible lines with standard crimped ends. They are rated as follows: GH195 / FC355 / FC510 / 2807 PTFE / GH100. Also the end fittings are JIC 37 degrees on all hoses.

Rationale (Pros & Cons):

Please refer to the attached information.

NEW FLYER

HYDRAULIC HOSES

Hydraulic hoses are used to provide a flexible, pressure-resistant, and leakproof connection between various hydraulic components such as pumps, motors, controls, actuators, coolers, and reservoirs.

HOSE SPECIFICATION				
Hose Type	Specification	Construction	Tem. Range	End Fitting
GH195	Meets or Exceeds SAE 100R2AT Type S, EN8532SN, ISO 1436-1 Type 2SN	AQP elastomer tube, double wire braid reinforcement and blue AQP elastomer cover.	-40 to 300°F (-40 to 150°C)	Crimped
FC355	FMVSS 106	AQP elastomer tube, polyester inner braid, single wire braid reinforcement and blue AQP elastomer cover.	-40 to 300°F (-40 to 150°C)	Crimped
FC510	Exceeds SAE 100R2	AQP elastomer tube, Hi-Pac braided wire reinforcement and blue AQP elastomer cover.	-40 to 300°F (-40 to 150°C)	Crimped
2807 PTFE	SAE 100R14A	Extruded PTFE tube with stainless steel single wire braid	-100 to 500°F (-73 to 260°C)	-
GH100	Tested with ASTM D6751 Fuel Temp. Range -40°C to +150°C	Polyester braided cover, Extremely abrasion resistant	-40 to 300°F (-40 to 150°C)	Crimped

Engine compartment hose assembly applications are as follow:

1) Coolant vent line - FC355
2) Fuel lines - GH100
3) Air line - FC355
   - Air line high temp. - 2807 PTFE
4) Engine and Trans oil - FC355
5) Hydraulic and PS lines
   - Suction line - FC355
   - Medium pressure and bypass line - FC510
   - High pressure - GH195

RFP NO. 4000

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Deviation #:	71	Proposer:	New Flyer of America
RFP #:	4000	Page: 210	Section: 5.3.1.2.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Hydraulic Drive)
Hydraulic fluid is to be filtered, cooled to maintain 185 degrees maximum at 125 degrees ambient temperature, and have a bypass system to allow accessories to operate if filter is plugged.

New Flyer's Deviation/Clarification:

New Flyer buses are equipped with a self-contained hydraulic system that does not require a filter and a cooling system.

Rationale (Pros & Cons):

Clarified during 6/10/2010 teleconference:

New Flyer hydraulic system is equipped with a hydraulic oil cooler to maintain fluid temperatures within acceptable limits.

NEW FLYER

Cam
Patented New Flyer "Shur-Lift" cam and lever supplies the force needed to raise or lower the ramp.
External mounted skid plate protects cam mechanism.
Shown without H.E.L.P bumper installed.

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RFP NO. 4000

EXHIBIT 2

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Deviation #: 66		Proposer:	New Flyer of America
RFP #: 4000	Page: 200	Section:	5.2.6.7.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Loading System)
The underside of the deployed ramp shall be covered with flooring material matching the color of the slats, to serve as the entrance area when in the stowed position. This flooring material shall be secured to the ramp along its perimeter with stainless steel strips to prevent the edges from lifting due to water intrusion and passenger traffic.

New Flyer's Deviation/Clarification:

The 35' and 40' buses are equipped with a wheelchair ramp surface that is covered with 3M non-slip coating without stainless steel strips.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 67		Proposer:	New Flyer of America
RFP #: 4000	Page: 207	Section:	5.3.1.1.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Gradability)
Gradability requirement shall be met on grades with a surface friction co-efficient of 0.3 and above at SLW with all accessories operating. Power plant shall enable the coach to maintain a speed of 44 mph on a 2-½ percent grade and 7 mph on a 16 percent grade.

The minimum acceleration rates are shown on the graph entitled "Transit Coach Minimum Acceleration Rates".

New Flyer's Deviation/Clarification:

New Flyer would like to clarify that with all accessories running at full load (with maximum parasitic losses) the bus can achieve a 35 mph on a 2-½ percent grade and 4 mph speed at 16% ascending grade at GVWR. Please note that these values are based on rolling resistance coefficient of 0.007 as provided by Voith.

Please refer to the attached documentation under Section 4 tab 3 – IV (60-ft and 40-ft proposal).

Rationale (Pros & Cons):

At Normal operating condition, buses will achieve specified 44 mph at 2-1/2 percent grade and 7 mph it 16% grade. The 60-ft bus will achieve 6 mph at 16% grade.

RFP NO. 4000

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Deviation #: 68		Proposer:	New Flyer of America
RFP #: 4000	Page: 209	Section:	5.3.1.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Mounting)
The power plant shall be suitably protected by skid plates welded to the coach frame or bolted to the engine cradle to prevent damage to the engine or transmission sumps from contact with road surfaces

New Flyer's Deviation/Clarification:

The engine support rails on New Flyer's buses provide the required protection from road hazards while being a lighter weight solution to The Port Authority proposed skid plates.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #:	65	Proposer:	New Flyer of America
RFP #:	4000	Page: 200	Section: 5.2.6.7.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(WHEELCHAIR LOADING DEVICE; Accommodations)
A Lift-U wheelchair ramp or Approved Equal shall be provided and installed at the front door of the coach.

The ramp shall be in two sections which are hinged together. The ramp shall be constructed of stainless steel.

New Flyer's Deviation/Clarification:

The 60' bus design is equipped with New Flyer's patented flip type ramp, which is hydraulically operated and has a clear width of 30.2" inches, and a length of 44" inches. The ramp is rated for 600 lbs. and is constructed of 3/16" aluminum. It has a deployment angle ratio of 1:4.

Rationale (Pros & Cons):

Please note that this feature is inherent to our proposed bus design.

Please refer to the attached documentation.

NEW FLYER

WHEELCHAIR RAMP

The Wheelchair Ramp is a hinged aluminum non-slip platform located at the front of the vehicle in the door area. The ramp is stowed in a recess in the floor.
The system that operates it consists primarily of three components.
1. Hydraulic Pump and Reservoir Assembly
2. Manifold Block Assembly
3. Ramp Mechanism Assembly c/w skid plate protection
All three are located in the same area and operate together to hinge the ramp through a greater than 180° arc. Fully deployed it can rest at the street or curb level for wheelchair passenger use.

Operation

The New Flyer Industries Limited patented aluminum wheelchair ramp complies with ADA regulations. The ramp is hydraulically operated by the driver and is interlocked with programmable logic controller (PLC). The ramp is completely installed within vehicle, and is not subjected to road damage. Brake and accelerator interlock are provided through the opening of any door. A flashing light and audible signal serve as a warning to passengers that the ramp is operating. The ramp can also be manually deployed or raised by pull strap. The wheelchair ramp contains its own hydraulic power source.

NEW FLYER

Operating Procedures

Operator's control is located on the lower right side of the driver's instrument panel. A guarded three-position switch performs the following functions:

- FLOAT

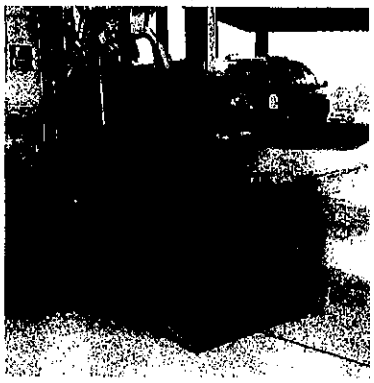
This is the normal position of the switch and the hydraulic pump is inoperative. The ramp will float to either DEPLOYED or STOWED position. Manual operation is possible in the FLOAT position

- DEPLOY

This position turns the pump on and sends a flow of oil through the manifold block to the ramp mechanism assembly. The ramp then moves from the stowed position and starts through its arc until fully deployed.

- STOW

This position turns the pump on and sends a flow of oil through the manifold block to the ram mechanism assembly to move the wheelchair ramp into the stowed position (flush with the floor).



NEW FLYER

Specifications

Description	Measurement
Wide	30.5 inches
Length	44 inches
Supporting Load	600 lb
Degree of Slope kneeling position:	14° degrees to grade
Degree of Slope kneeling position to a 6 inch curb	6° degrees to curb
Operation switch(3-Pole Toggle)	1. "Deploy; 2. "Float" 3. "Stow"
Type	Electronic/Hydraulic
Cycle Times Total Cycle: Fast Idle Normal Idle	 10 seconds 20 seconds
System Fluid Capacity	1 quart
Hydraulic System	Independent from sources of Hydraulic Power
Hydraulic Fluid	ATF
Operating Hydraulic Pressure	1200-1400 psi
Hydraulic Cylinder	One (stow & deploy)
Hydraulic Cylinder Size	1.5" dia. x 4" stroke 0.75" Dia. Rod Double acting welded construction 2500 psi (working pressure)
Weight of Complete Lift	80 lb

Independent Electric/Hydraulic Power Pack Shown with Maintenance Access Door Open Location is front, vestibule area

RFP NO. 4000

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Deviation #:	64	Proposer:	New Flyer of America
RFP #:	4000	Page: 200	Section: 5.2.6.7.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(WHEELCHAIR LOADING DEVICE; Accommodations)
A Lift-U wheelchair ramp or Approved Equal shall be provided and installed at the front door of the coach.

The ramp shall be in two sections which are hinged together. The ramp shall be constructed of stainless steel.

New Flyer's Deviation/Clarification:

The 35' and 40' bus designs are equipped with our patented flip type ramp, which is hydraulically operated and has a clear width of 32.25" inches, and a length of 47.6" inches. The ramp is rated for 600 lbs. and is constructed of 3/16" aluminum.

It has an industry best-in-class deployment angle ratio of 1:7 which neither Lift-U, Ricon or T&T can provide to the Port Authority.

Rationale (Pros & Cons):

Please note that this feature is inherent to our proposed bus design.

Please refer to the attached documentation.

NEW FLYER XCELSIOR BETTER BY DESIGN.

Sales Information Bulletin: SIB# 580-001 REV A

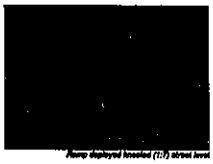
Wheelchair Ramp

Product Features
New Flyer's patented wheelchair ramp design is leveraged from our proven and reliable LF model. The ramp is a flip-out aluminum non-slip platform located at the entrance door of the bus. As with our previous models, it is a self-contained, modular system that is mounted flush into the floor of the bus.

The ramp system consists primarily of four components:
1. Stainless steel ramp box and aluminum cover assemblies
2. Hydraulic pump, reservoir and integrated manifold block assemblies
3. Ramp mechanism assembly (operates entirely within stainless ramp box)
4. Aluminum light weight non-slip ramp platform assembly

All four components operate to articulate the ramp from the stowed position in the floor to the curb or street level.


Ramp deployed at curb height (street level)


Ramp deployed kneeled (1:7) street level

Benefits
- *Industry leading slope of 1:7* that significantly exceeds ADA regulations
- Designed for manual operation in the event of an electrical or hydraulic failure that ensures the bus will remain in revenue service

Operation
The ramp is hydraulically operated by the driver and is interlocked with programmable logic controller (PLC). The ramp is completely installed within the vehicle floor and structure and is not subjected to road damage. Brake and accelerator interlocks are provided through the opening of any door. A flashing LED light and audible signal at the entrance door serve as a warning to passengers that the ramp is operating. The ramp can also be manually deployed or raised by a pull strap. The wheelchair ramp is powered by its own self-contained hydraulic power source.

NEW FLYER XCELSIOR BETTER BY DESIGN.

Operating Procedures:
Operator's control is located on the lower right side of the driver's instrument panel. A guarded three-position switch performs the following functions:

1. Float
This is the normal position of the switch and the hydraulic pump is inoperative. The ramp will float to either the DEPLOYED or STOWED position. Manual operation is possible in the FLOAT position.

2. Deploy
This position turns the pump on and sends a flow of oil through the manifold block to the ramp mechanism assembly. The ramp then moves from the stowed position and starts through its arc until fully deployed.

3. Stow
This position turns the pump on and sends a flow of oil through the manifold block to the ramp mechanism assembly to move the wheelchair ramp into the stowed position (flush with the floor).

Service/Repair
The self-contained, modular design of this ramp allows quick removal and installation of the ramp via eight mounting bolts and one electrical connector allowing bench servicing if a ramp system require repair. The stainless steel box protects the inner components from the damaging effects of being exposed to the elements.

Specifications

Electrical Characteristics			
Width:	32.25 inches	System Fluid Capacity:	1 quart
Length:	47.4 inches	Hydraulic System:	Independent Hydraulic Power pack w/ integrated Manifold
Supporting Load:	600 lb.	Hydraulic Fluid:	ATF
Degree of Slope leveling position:	8.1° degrees to grade	Operating Hydraulic Pressure:	1800 psi
Degree of Slope leveling position: (w/ 6-8 inch curb)	2° degrees to curb	Hydraulic Cylinder	One (stow & deploy)
Operation switch: (3-Pole Toggle)	1. "Deploy" 2. "Float" 3. "Stow"	Hydraulic Cylinder Size	1.5" dia. Bore x 3.5" Stroke 0.75" dia. Rod
Type:	Hydraulic (electrically powered)		Double acting welded construction 2500 psi (working pressure rated)
Cycle Times: 1. Deploy 2. Stow 3. Total	1. 10 seconds 2. 10 seconds 3. 20 seconds	Weight of Complete Lift Assembly	130 lbs
		Testing	New Flyer has performed durability testing on this new design which has been cycled 50,000 times which equates to a 12 year life span

NEW FLYER XCELSIOR BETTER BY DESIGN.

PAGE 3 of 3

SIB: 580-001 | Model: 30FT, 35FT, 40FT, 60FT | Propulsion: DSL, CNG, LNG, ELEC | Type: Xcelsior, Low Floor | Created By: Cliff Murray Revision Date: 03/23/10

THIS DOCUMENT AND THE CONTENTS DISCLOSED HEREIN ARE THE CONFIDENTIAL AND PROPRIETARY INFORMATION OF NEW FLYER INDUSTRIES CANADA ULC AND NEW FLYER OF AMERICA INC. AND ARE DISCLOSED BY NEW FLYER IN CONFIDENCE. THIS DOCUMENT AND THE CONTENTS HEREIN ARE NOT TO BE DISCLOSED BY THE INTENDED RECIPIENT WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF NEW FLYER. ANY UNAUTHORIZED DISCLOSURE, REPRODUCTION OR OTHER DISTRIBUTION OF THIS DOCUMENT OR INFORMATION IS STRICTLY PROHIBITED AND MAY RESULT IN ACTION BEING TAKEN AGAINST THE PARTY MAKING THE UNAUTHORIZED DISCLOSURE. THIS DOCUMENT AND ALL COPIES THEREOF MUST BE RETURNED TO NEW FLYER UPON REQUEST.

RFP NO. 4000

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Deviation #: 61 Proposer: New Flyer of America

RFP #: 4000 Page: 191 Section: 5.2.6.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(PASSENGER ASSISTS; General Requirements)
Brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be flush with the surface and free of rough edges.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing the surface mounted fasteners for passenger assists application, however will not have rough edges. This is a standard feature on New Flyer's buses.

Rationale (Pros & Cons):

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Deviation #: 62 Proposer: New Flyer of America

RFP #: 4000 Page: 193, 196 Section: 5.2.6.4.1, 5.2.6.4.6

Complete Description of Deviation:

Port Authority Specification Requirement:

(Destination Signs, General, Interior Destination Sign)
Destination signs shall be included on the front, on the right side just forward of the rear door, on the interior at the first window behind the driver's barrier, and on the rear of the coach.

The sign shall be located in the first street side window position rearward of the driver's barrier.

New Flyer's Deviation/Clarification:

The interior destination sign will be installed on the window located after the secure diagnostic station (SDS) box on second street side window.

Rationale (Pros & Cons):

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Deviation #: 63 Proposer: New Flyer of America

RFP #: 4000 Page: 197 Section: 5.2.6.4.7

Complete Description of Deviation:

Port Authority Specification Requirement:

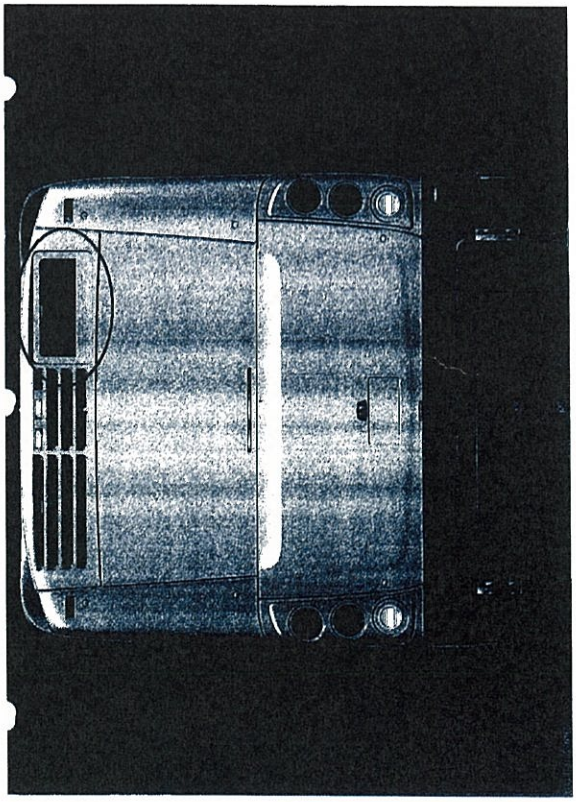
(Rear Destination Sign)
The sign shall be located on the rear of the bus above the engine door and either centered or to the curb side.

New Flyer's Deviation/Clarification:

New Flyer relocated the rear route sign to the top right hand side of the rear crown, owing to the design changes associated with EPA 2010 compliance.

Please refer to the attached illustration.

Rationale (Pros & Cons):



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Deviation #: 58 Proposer: New Flyer of America

RFP #: 4000 Page: 189 Section: 5.2.6.1.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Exit Signal)
Additionally a push button to activate the stop request signal shall be installed in the rear door actuator compartment cover to enable passengers standing at the rear door to activate the stop request signal.

New Flyer's Deviation/Clarification:

The stop request push button is located on the stanchion near to the exit door in lieu of rear door actuator compartment. On low floor buses installing push buttons on the door actuator compartments makes it difficult to actuate the system.

Rationale (Pros & Cons):

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Deviation #: 59 Proposer: New Flyer of America

RFP #: 4000 Page: 190 Section: 5.2.6.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Outside Mirrors)
The right side rearview mirror shall be mounted so that its lower edge is no less than 80 inches above the street surface. Reflect decals shall be applied to the back side of the mirror.

The left side rearview mirror shall be mounted so that its uppermost edge is no more than 80 inches from the street surface.

Curbside outside mirror shall be a B & R 6 x 14 inch or Approved Equal,
Curbside mirror shall have a #200-3GG arm.

Roadside mirror shall be a B & R 6 x 14 inch or Approved Equal, Roadside mirror shall have a #238 arm.

A remote switch (on dash) shall be a Ramco ELE 310.

New Flyer's Deviation/Clarification:

On 60-ft bus, the right side rearview mirror is mounted so that its lower edge is no less than 72 inches above the street surface with the 8x15" mirror. The left side rearview mirror is mounted so that its lower edge is no less than 57 inches above the street surface with the 8x15" mirror.

On 40-ft bus, the left side rearview mirror is mounted so that its lower edge is no less than 54 inches above the street surface with the 8x15" mirror.

Please note that the following factors prevent the mirror from being mounted 80 inches above the street surface: the driver's position, the windshield's clear opening, and the mirror's size. Combined, these factors reduce the functionality of the mirror.

Curbside mirror and streetside mirrors are 8"x15" instead of 6x14. The mirror arms will be equivalent to the specified to fit on our buses.

The Remote mirror switch shall be Metagal # 50.870.00.

RFP NO. 4000

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Rationale (Pros & Cons):

On 60-ft bus, the right side mirror clearance of 78 inches to the street surface can be achieved with 8" x 11" size mirror.

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Deviation #: 60 Proposer: New Flyer of America

RFP #: 4000 Page: 190 Section: 5.2.6.2.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Inside Mirrors)
Inside mirrors shall consist of; a 4 x 16-inch flat mirror centered above the windshield

an 11-inch round convex mirror located above and just behind the rear passenger door

and an 8-inch round convex, high-dome mirror located on or above the right A-post positioned to allow the operator to view the front of the coach

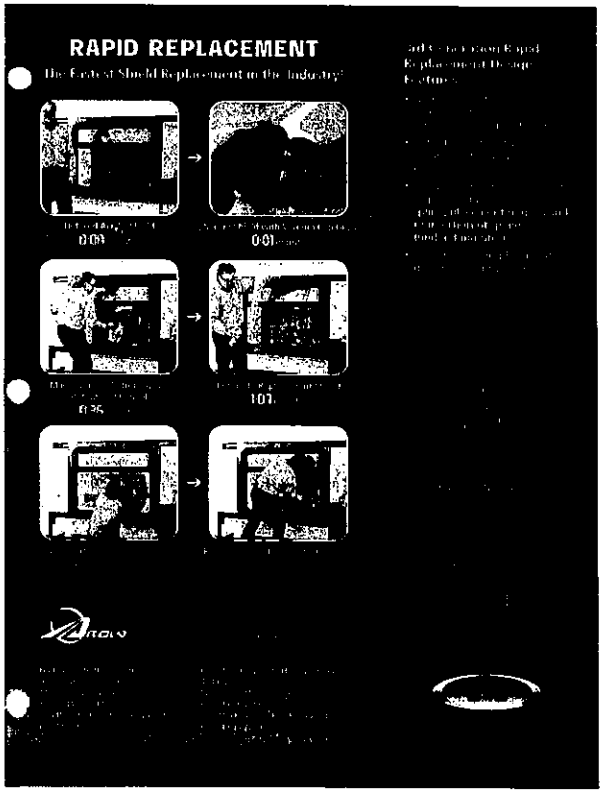
New Flyer's Deviation/Clarification:

New Flyer recommends the following mirror sizes for our bus design:

8" x 15" mirror centered above the windshield.
12" round convex mirror located above and behind the rear passenger door.
6" round convex mirror located on or above the right A-post.

Rationale (Pros & Cons):

New Flyer experience has shown that these sizes are ideally suited for the locations indicated.



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Deviation #: 55		Proposer:	New Flyer of America
RFP #: 4000	Page: 185	Section:	5.2.4.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(SIDE WINDOWS; Dimensions)
Vertical mullions between windows, including the trim, shall not exceed 7 inches in width.

New Flyer's Deviation/Clarification:

On our 60' bus platform, the vertical mullions between windows are 11.5" inches wide.

Rationale (Pros & Cons):

Please note that this is inherent to our proposed bus design.

RFP NO. 4000

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Deviation #: 56		Proposer:	New Flyer of America
RFP #: 4000	Page: 185	Section:	5.2.4.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(SIDE WINDOWS; Dimensions)
All side windows shall have emergency escape mechanisms.

New Flyer's Deviation/Clarification:

The rear bench seat windows on the curbside and streetside are not equipped with emergency escape provisions due to the height of the seat relative to the lower edge of the window assembly.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 57		Proposer:	New Flyer of America
RFP #: 4000	Page: 186	Section:	5.2.4.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(DESTINATION SIGN WINDOWS)
An electric wire heating grid shall be installed on the inside of the front destination sign window to prevent fogging of the viewing areas. It shall be wired to operate when the coach HVAC system is in the heat mode and shall be equipped with a suitable thermostat circuit to prevent grid overheating.

New Flyer's Deviation/Clarification:

The electric wire heating grid is activated with the defroster in lieu of the coach HVAC system and it is not equipped with the thermostat.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #:	54	Proposer:	New Flyer of America
RFP #:	4000	Page:	185, 186
Section:	5.2.4.2.1, 5.2.4.2.2		

Complete Description of Deviation:

Port Authority Specification Requirement:

(SIDE WINDOWS; Dimensions, Materials)
Side windows shall be manufactured by Atwood/Excell or Approved Equal with quick change glazing and shall extend from the shoulder height of a 5th percentile seated female passenger to the eye level of a 95th percentile standing male passenger.

The window frames shall be made from Anolok black anodized aluminum extrusions or Approved Equal.

New Flyer's Deviation/Clarification:

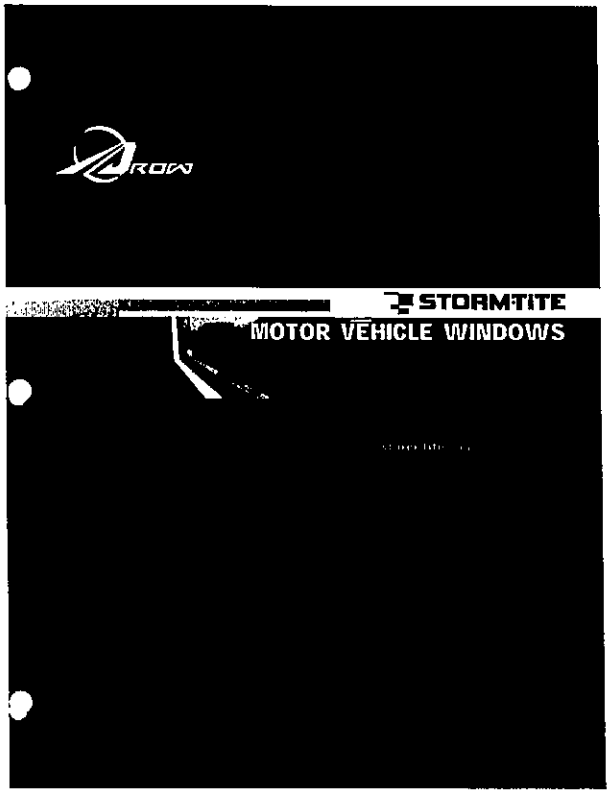
New Flyer is proposing windows manufactured by Arow Global Inc. (Storm-Tite).

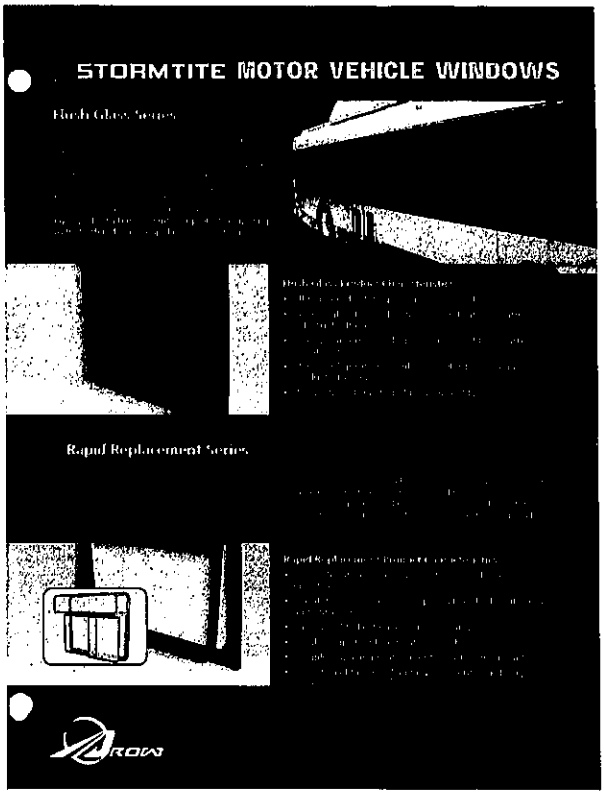
Storm-Tite provides a "Sandocolor" finish, which is more durable than Anolok. It is used for Architectural uses, i.e. long life applications and is better for high touch areas like window frames.

Please note, if the BRT styling option is selected, the only available glass configurations are tempered or acrylic.

Rationale (Pros & Cons):

Please refer to the attached documentation.





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Deviation #: 50 Proposer: New Flyer of America

RFP #: 4000 Page: 176 Section: 5.2.3.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(PASSENGER SEATS; General Design and Structure)
Seats shall be mounted on tracks to facilitate minor adjustments to the seating arrangements.

The structure shall be fully cantilevered from the sidewall with sufficient strength for the intended service.

The underside of the seat and the sidewall shall be configured to prevent debris accumulation and the transition from the seat underside to the coach sidewall to the floor cove radius shall be smooth.

New Flyer's Deviation/Clarification:

New Flyer buses provide a combination of cantilevered and pedestal mounted seats.

On the 60' bus, all upper deck seats and W/C flip-up seats are pedestal mounted and all remaining seats are cantilevered while on 40' bus, only the W/C flip-up seats are pedestal mounted.

Also the seat back design restricts to provide trash deflectors on sidewalls and back of longitudinal seats except the fuel tank longitudinal seats on 60-ft bus.

Rationale (Pros & Cons):

Please note that this is a design constraint and inherent to our bus design.

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Deviation #: 51 Proposer: New Flyer of America

RFP #: 4000 Page: 178 Section: 5.2.3.2.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Seat Dimensions and Arrangement)
Transverse seats shall have a nominal seat pitch of 30 inches with a hip-to-knee room dimension of no less than 29 inches at all seating positions. Minimum foot room shall be 14 inches which may be reduced to 9 inches at the wheel housing positions.

New Flyer's Deviation/Clarification:

There are limited locations in the upper deck of our 60' bus that have a reduced hip-to-knee room of 27.5" inches.

While on 40-ft buses, the curbside lower deck seats and upper deck seats have hip-to-knee room dimensions of 27" inches.

The foot room at first forward facing seats on upper deck (both sides) is limited to 11" inches because of the modesty panel location.

Rationale (Pros & Cons):

Please refer to the attached seating layouts under Section 4 Tab IV – M.

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Deviation #: 52 Proposer: New Flyer of America

RFP #: 4000 Page: 183 Section: 5.2.3.4.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(FLOOR COVERING; Vestibule)
Any metallic moldings, extrusions or trim in contact with floor, stepwells, or driver's platform shall be stainless steel.

New Flyer's Deviation/Clarification:

New Flyer utilizes a combination of stainless steel and anodized aluminum trims. Anodized aluminum is limited to those applications where stainless steel cannot be properly formed for the given application (i.e.: upper deck platform on 60-ft bus).

Rationale (Pros & Cons):

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Deviation #: 53 Proposer: New Flyer of America

RFP #: 4000 Page: 184 Section: 5.2.3.4.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Step Wells)
The edge of the floor covering material at the openings of the step wells and the edge of each riser shall be white, while forming an integral part of the floor covering material.

New Flyer's Deviation/Clarification:

The 40' and 35' bus' stepwell edge is covered with Line-X, which is available in yellow only.

Rationale (Pros & Cons):

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Deviation #: 46 Proposer: New Flyer of America

RFP #: 4000 Page: 173 Section: 5.2.2.3.7

Complete Description of Deviation:

Port Authority Specification Requirement:

(Onboard Diagnostics)
Space shall be provided on the panel for future additions of no less than 5 indicators as the capability of onboard diagnostic systems improve.

New Flyer's Deviation/Clarification:

The 40' bus can provide any additional indicators required by The Port Authority on the LCD panel being proposed.

On the 60' bus, there is a fixed space for total 32 indicators.

Rationale (Pros & Cons):

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Deviation #: 47 Proposer: New Flyer of America

RFP #: 4000 Page: 173 Section: 5.2.2.3.7

Complete Description of Deviation:

Port Authority Specification Requirement:

(ONBOARD DIAGNOSTIC INDICATORS)
Beeper – Rear Door emergency switch compartment opened

New Flyer's Deviation/Clarification:

New Flyer's design utilizes a buzzer to meet this specification requirement.

Rationale (Pros & Cons):

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Deviation #: 48 Proposer: New Flyer of America

RFP #: 4000 Page: 174 Section: 5.2.3.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Trim Panels)
Interior mullion trim, moldings, and trim strips shall be stainless steel.

New Flyer's Deviation/Clarification:

New Flyer uses anodized aluminum trims for this application.

Rationale (Pros & Cons):

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Deviation #: 49 Proposer: New Flyer of America

RFP #: 4000 Page: 175 Section: 5.2.3.1.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Headlining)
Ceiling panels shall be melamine material or Approved Equal.

Headlining panels covering operational equipment that is mounted above the ceiling shall be attached with hinges and 1/4 turn tamperproof fasteners for ease of service.

New Flyer's Deviation/Clarification:

The 35' and 40' buses utilize ceiling panels and pier panels constructed from ABS material.

The 60' bus utilizes vinyl-coated aluminum ceiling panels around driver's compartment and melamine ceiling panels in passenger area.

The headlining panels covering operational equipment that is mounted above the ceiling are attached with hinges and 5/16" square key locks.

Rationale (Pros & Cons):

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Deviation #: 42 Proposer: New Flyer of America

RFP #: 4000 Page: 170 Section: 5.2.2.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Driver Controls)
If this is not possible, a Lexan cover sheet 1/10 inch minimum shall be placed over the entire switch panel to protect wording from being abraded away.

New Flyer's Deviation/Clarification:

On side console, 0.015" thick lexan decal is provided.

Rationale (Pros & Cons):

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Deviation #: 43 Proposer: New Flyer of America

RFP #: 4000 Page: 170 Section: 5.2.2.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(DRIVER SWITCHES AND CONTROLS)
Dynamic braking Normal/Winter mode switch

New Flyer's Deviation/Clarification:

It is not clear what it is meant by Normal/Winter mode switch, New Flyer can discuss this further at pre-production stage, if New Flyer becomes successful bidder.

Rationale (Pros & Cons):

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Deviation #: 44 Proposer: New Flyer of America

RFP #: 4000 Page: 172 Section: 5.2.2.3.6

Complete Description of Deviation:

Port Authority Specification Requirement:

(Instrumentation)
The instrument panel shall also include air brake reservoir pressure gauge(s) (minimum 3-inch diameter) with indicators for primary and secondary air tanks and voltmeter(s) to indicate the operating voltage across the coach batteries.

New Flyer's Deviation/Clarification:

New Flyer provides three (3) single needle 2" diameter air gauges to monitor the front, center and rear brake reservoirs on the 60' buses.

On our 40' buses, these 2" gauges are part of the Vanaco digital instrument panel cluster.

Rationale (Pros & Cons):

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Deviation #: 45 Proposer: New Flyer of America

RFP #: 4000 Page: 172-173 Section: 5.2.2.3.7

Complete Description of Deviation:

Port Authority Specification Requirement:

(Onboard Diagnostics)
All indicators shall have a method of momentarily testing the operation of the lamp only. This shall be accomplished through the use of a single switch.

New Flyer's Deviation/Clarification:

New Flyer would like to clarify that this functionality is provided through a five-second delay on the Instrument Panel, which precludes the need for a separate switch.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 38 Proposer: New Flyer of America

RFP #: 4000 Page: 169 Section: 5.2.2.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Passenger Interior Lighting)
In addition, four (4) step lights shall be provided at both the front and rear stepwells. These may be mounted in the fore and aft modesty panels and step risers. These front step lights shall be extinguished when the front doors are closed.

New Flyer's Deviation/Clarification:

New Flyer provides illumination to the entrance and exit door areas with LED lighting that is located on the bottom of the front and rear door headers and operate when the front and rear doors are open. These lights illuminate the front vestibule, rear door area and street level meeting all ADA requirements.

Also LED step lighting is installed on either side of the step well to the upper deck.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 39 Proposer: New Flyer of America

RFP #: 4000 Page: 170 Section: 5.2.2.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Driver Controls)
OFF
DAY/RUN
NITE/RUN
CL/ID

New Flyer's Deviation/Clarification:

The master run switch is labeled as following:
Stop Engine
Dey Run
Night Run
Night Park

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 40 Proposer: New Flyer of America

RFP #: 4000 Page: 170 Section: 5.2.2.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Driver Controls)
The emergency flasher shall be located in close proximity to the door control.

New Flyer's Deviation/Clarification:

The hazard lights are activated by the multiplex system precluding the need for a separate flasher.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 41 Proposer: New Flyer of America

RFP #: 4000 Page: 170 Section: 5.2.2.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Driver Controls)
Turn signal and high beam controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty momentary contact switches.

New Flyer's Deviation/Clarification:

The turn signal controls are water-resistant in design.

Rationale (Pros & Cons):

Please note that this feature is standard on New Flyer buses.

RFP NO. 4000

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Deviation #: 35 Proposer: New Flyer of America

RFP #: 4000 Page: 166 Section: 5.2.2.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Exterior Lighting)
The front turn signal lights shall be visible from the side of the coach.

New Flyer's Deviation/Clarification:

New Flyer would like to clarify that the front turn signals are located front of the bus and can be visible form the front side of the coach only.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 36 Proposer: New Flyer of America

RFP #: 4000 Page: 167 Section: 5.2.2.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Passenger Interior Lighting)
The passenger interior lighting system shall be DINEX lighting system or Approved Equal.

The lighting system shall interface with vehicle multiplex control systems supplied by various vendors through J1939 gateway with serial data input or discrete inputs to automatically adjust the brightness of each individual light fixture to improve driver's visibility when the windshield wiper motor is set at high speed.

New Flyer's Deviation/Clarification:

New Flyer is proposing a Pretoria Gen. IV LED interior lighting system. Pretoria meets and exceeds the Dinex LED lighting system except for the feature of automatic adjustment of each individual light fixture when the windshield wiper motor is set at high speed. On our buses, the wiper control is not tied into the multiplex system, and cannot be programmed this way.

Rationale (Pros & Cons):

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Deviation #: 37 Proposer: New Flyer of America

RFP #: 4000 Page: 169 Section: 5.2.2.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

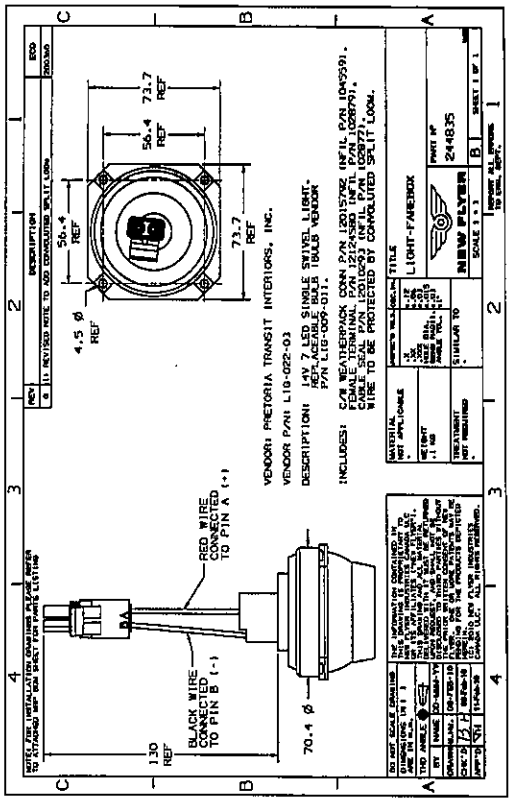
(Passenger Interior Lighting)
A light shall be installed directly over the space provided for the farebox. It shall operate when the main interior lights are on. This lamp assembly shall be a Dialight LED or Approved Equal

New Flyer's Deviation/Clarification:

New Flyer utilizes a Pretoria Transit Interiors supplied LED light for this application.

Rationale (Pros & Cons):

Please refer to the attached documentation.



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Deviation #: 31 Proposer: New Flyer of America

RFP #: 4000 Page: 164 Section: 5.2.2.2.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Windshield Wipers)
No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms.

New Flyer's Deviation/Clarification:

Please note the electric wipers will sustain damage to the motor gears or linkage if the wiper arms are manually manipulated.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 32 Proposer: New Flyer of America

RFP #: 4000 Page: 165 Section: 5.2.2.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Exterior Lighting)
All exterior lighting shall be nominal 12VDC and sealed to prevent accumulation of moisture or dust, and each lamp shall be replaceable in less than 5 minutes by a 2M mechanic. All exterior lights (except headlights) shall be Dialight LED type.

The coach shall be provided with "sealed beam" automotive headlights of countersunk type having tilt ray features which shall be controlled by a button dimming switch mounted on floor convenient to operator's left foot.

New Flyer's Deviation/Clarification:

Please note, it could take anywhere from 12 to 18 minutes to remove and replace an exterior light (application dependent).

The 35' and 40' bus headlamps are a combination of LED for low beam and high intensity halogens for the high beams. This design comes equipped with a six (6) year warranty and is projected to reduce the life-cycle costs of bulbs by as much as $3,000.00/bus. The tilt ray feature is not provided.

Rationale (Pros & Cons):

The 40-ft headlight design comes equipped with a six- (6) year warranty and is projected to reduce the life-cycle costs of bulbs by as much as $3,000.00/bus.

RFP NO. 4000

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Deviation #: 33 Proposer: New Flyer of America

RFP #: 4000 Page: 165 Section: 5.2.2.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Exterior Lighting)
The coach shall be provided with "sealed beam" automotive headlights of countersunk type having tilt ray features which shall be controlled by a button dimming switch mounted on floor convenient to operator's left foot.

New Flyer's Deviation/Clarification:

Our 60' buses are equipped with four (4) x 4" inch round Halogen light bulbs headlamps in lieu of sealed beam headlights.

Rationale (Pros & Cons):

Please note this feature is inherent to New Flyer's proposed 60-ft bus design.

RFP NO. 4000

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Deviation #: 34 Proposer: New Flyer of America

RFP #: 4000 Page: 165 Section: 5.2.2.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Exterior Lighting)
The coach shall be equipped with Daytime Running Lights which shall consist of the high beam of the headlights operated at a reduced brightness.

New Flyer's Deviation/Clarification:

The 35' and 40' buses are equipped with LED low beam headlights. The daytime running lights are also offered in LED at normal intensity.

Rationale (Pros & Cons):

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Deviation #: 27 Proposer: New Flyer of America

RFP #: 4000 Page: 152 Section: 5.2.1.9.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(SERVICE COMPARTMENTS AND ACCESS DOORS; Exterior)
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 coach washing operations.

New Flyer's Deviation/Clarification:

The 60' bus' front defroster door is bottom hinged and secured with square key locks that prevents the door from coming loose.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 28 Proposer: New Flyer of America

RFP #: 4000 Page: 152 Section: 5.2.1.9.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(SERVICE COMPARTMENTS AND ACCESS DOORS; Exterior)
Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for the opening.

New Flyer's Deviation/Clarification:

The handles are not flush or recessed, and they protrude approximately 1/8" off the access doors.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 29 Proposer: New Flyer of America

RFP #: 4000 Page: 163 Section: 5.2.2.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(PASSENGER DOORS; Controls)
The braking effort shall be adjustable with hand tools only, from zero effort to the maximum capability of the rear axle brakes.

New Flyer's Deviation/Clarification:

The braking effort is non-adjustable and is set to 45 PSI to be equivalent to the service brake application.

Rationale (Pros & Cons):

New Flyer has experienced that the adjustable regulator has tendency to drift settings requiring constant readjustment and to eliminate the maintenance issue and adjustment required, non-adjustable regulator is provided.

RFP NO. 4000

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Deviation #: 30 Proposer: New Flyer of America

RFP #: 4000 Page: 164 Section: 5.2.2.1.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Actuators and Auxiliary Equipment)
Door linkage shall have lubrication points and fittings to allow load-carrying bearings to be greased periodically.

New Flyer's Deviation/Clarification:

Please note, these parts vendor supplied and the entrance door has no lubrication points or grease fittings.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 23 Proposer: New Flyer of America

RFP #: 4000 Page: 160 Section: 5.2.1.8.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(PASSENGER DOORS; Dimensions)
When open, the doors shall leave an opening no less than 81 inches in height.

Door opening widths may be reduced 3 inches on the sides of the extreme top and extreme bottom of each door opening. This 3-inch projection shall be reduced to 30 inches within 26 inches of the bottom and within 18 inches of the top.

New Flyer's Deviation/Clarification:

The entrance and exit doors have a clear opening (height) of 77" inches on the 35' and 40' buses and 75.4" inches on 60' buses.

Rationale (Pros & Cons):

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Deviation #: 24 Proposer: New Flyer of America

RFP #: 4000 Page: 160 Section: 5.2.1.8.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Door Glazing)
The upper section (½ door height) of both front and rear doors shall be glazed for no less than 45 per cent of the respective door opening area of each section. Glazing shall be easily replaceable by removing zip-locks from the door glass rubber moldings. The lower section of both the front and rear doors shall be glazed for no less than 25 percent of the door opening area of each section.

Glazing shall be easily replaceable by removing zip-locks from the door glass rubber moldings.

New Flyer's Deviation/Clarification:

The door glazing on our 35' and 40' buses is a full one-piece design on each panel, which provides the driver with an improved viewing area.

The glazing use quick change door glass clips in lieu of specified zip locks.

Rationale (Pros & Cons): Not Applicable

RFP NO. 4000

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Deviation #: 25 Proposer: New Flyer of America

RFP #: 4000 Page: 161 Section: 5.2.1.9.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(SERVICE COMPARTMENTS AND ACCESS DOORS; Interior)
Fasteners for all removable panels shall be ¼ turn quick release type

Hartwell latches shall be utilized in all locations where a thumb or hand latch (requiring no tools) is supplied.

New Flyer's Deviation/Clarification:

New Flyer uses Phillips Screws on all removable panels.

Where panels do not require special tools, 1/4 turn knobs are installed.

Rationale (Pros & Cons):

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Deviation #: 26 Proposer: New Flyer of America

RFP #: 4000 Page: 161 Section: 5.2.1.9.1

Complete Description of Deviation:

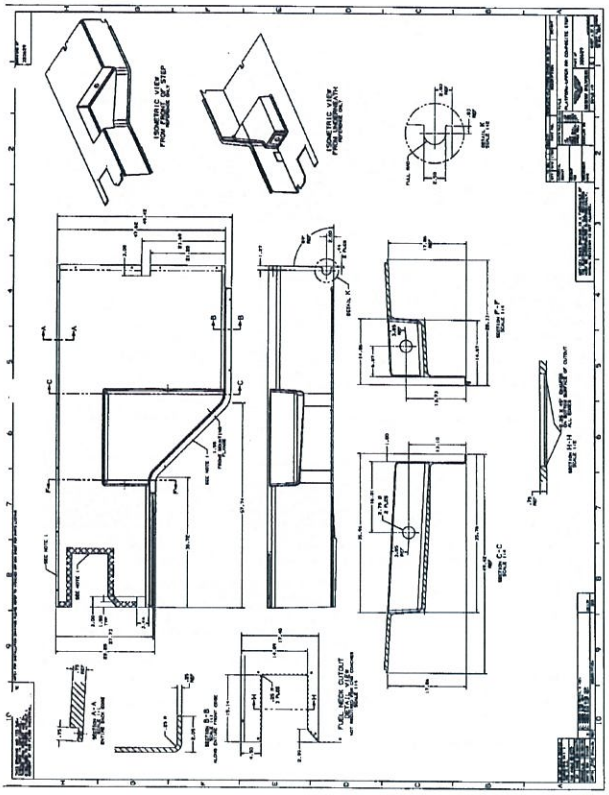
Port Authority Specification Requirement:

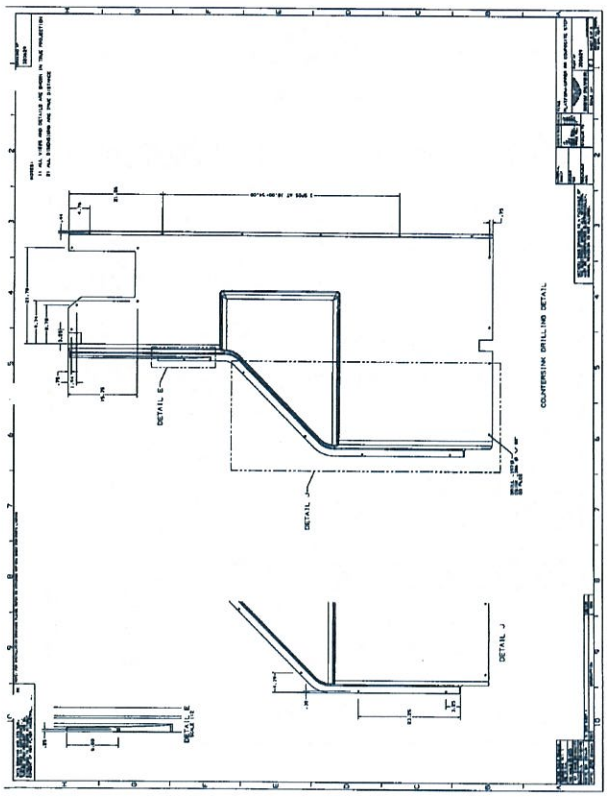
(SERVICE COMPARTMENTS AND ACCESS DOORS; Interior)
Large hatches (over 500 square inches) shall be secured with an over-center spring mechanism. Close by applying foot pressure downward. Open by inserting a tool in an edge opening and prying upward.

New Flyer's Deviation/Clarification:

The floor access door is designed as pull out type door. The rear bench access door is hinged and equipped with a prop rod.

Rationale (Pros & Cons):





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Deviation #: 21 Proposer: New Flyer of America

RFP #: 4000 Page: 158 Section: 5.2.1.7.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(WHEEL HOUSING; Construction)
The housing panels shall be constructed of no less than 12 gauge (0.109 inches) thick stainless steel.

The rear wheelhousings shall be covered with 1/4 inch floor rubber (color to match flooring under seats) attached with the proper adhesive.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing 40-ft and 60-ft wheelhousing as following:

35' and 40' Buses:
The front and rear wheelhousings are constructed of 14-gauge stainless steel, and the rear wheelhousing is covered with the Altro 2.7 mm flooring.

60' Bus:
The front wheelhousings are constructed of fiberglass and the rears with 14-gauge stainless steel The rears are covered with Altro 2.7 mm floor covering.

The wheelhousings meet the Wheelhouse Penetration Test and withstand impacts of a 2-inch steel ball, with at least 200 foot-pounds of energy without penetration. The rear wheelhousings are covered with the floor covering.

Rationale (Pros & Cons):

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Deviation #: 22 Proposer: New Flyer of America

RFP #: 4000 Page: 159 Section: 5.2.1.7.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Splash Aprons)
Splash aprons shall be composed of a minimum of ¼-inch fabric-reinforced belt material. Floor covering material will not be acceptable. They shall be installed behind each wheel or wheel set and shall extend downward to within 3 inches of the road surface.

New Flyer's Deviation/Clarification:

On our vehicle design, the splash Aprons extend downward to within 6" of the road surface (static) and they are located forward of the front wheels and rear of the rear wheels to reduce wheel splash.

The negative pressure created minimizes road splash.

Rationale (Pros & Cons):

Clarified during 6/7/2010 teleconference:

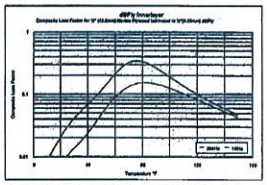
New Flyer will install splash aprons with height -to-road dimensions between 3" and 6" at Port Authority's discretion.

GREENWOOD FOREST PRODUCTS

dB-Ply®

Technical Data Sheet

Vibration Damping



• Figure 1 - dB-Ply Damping Loss Factors are at least 10 times higher than Normal Plywood

Typical resonance vibration damping measurements were made using a free-free beam 24" long by 2" wide ¾" thick. The beams were supported in the center on an impedance head in a temperature controlled climate chamber. The composite loss factors for ACQ dB-Ply are shown in Fig.1. ACQ plywood with identical dimensions had a composite loss factor of approximately 0.02 at all temperatures.

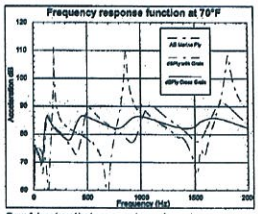
The damping effect is more efficient in the cross grain direction of the ply laminate because the system is less stiff in this direction, (see figure 5) and the VEL25 damping layer is better able to reduce the resonant vibrations. However the damping efficiency is so high, that dB-Ply will reduce all modes of vibration in any direction over a broad temperature and frequency range.

Reduction in Radiated Sound

Reduction of the peak levels of vibration will have a considerable effect on the radiated sound levels. When wood based construction materials are laminated with VEL 25 to form dB-Ply, the resonant vibrations are reduced considerably. Figure 2 shows the amplitudes of the resonant frequencies are 10 to 20dB higher with AB Marine than those of the dB-Ply.

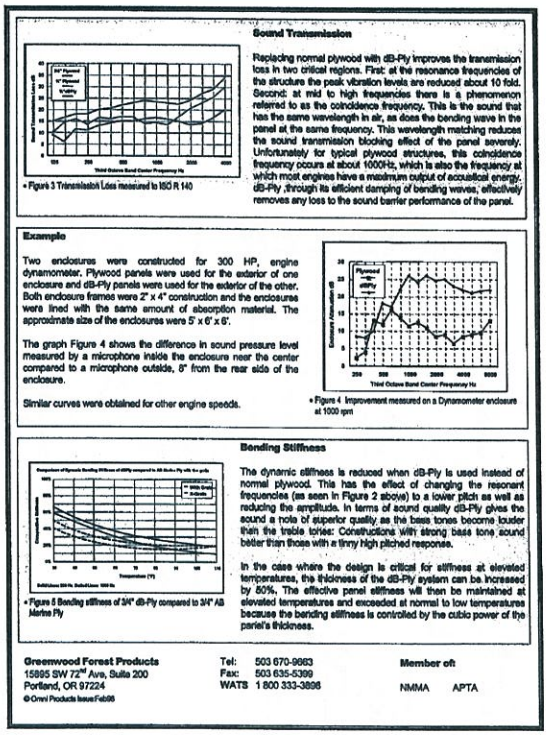
Plywood is chosen as a construction material for its lightweight and high strength. This gives it a handicap when it is also used as a noise barrier as its low inertia and low internal damping allows sound to pass through it with relative ease.

This high strength to weight ratio makes plywood a very efficient radiator of sound, hence its use in the construction of musical instruments. Increasing the damping by using dB-Ply, then makes the material couple less efficiently with the surrounding air as well as reducing the peak levels at resonance.



• Figure 2 Impedance Head response on beams of same size

Greenwood Forest Products
15895 SW 72nd Ave, Suite 200
Portland, OR 97224
Tel: 503 670 9663
Fax: 503 635 5399
WATS: 1 800 333-3696



Sound Transmission

• Figure 3 Transmission Loss measured to ISO R 140

Replacing normal plywood with dB-Ply improves the transmission loss in two critical regions. First: at the resonance frequencies of the structure the peak vibration levels are reduced about 10 fold. Second: at mid to high frequencies there is a phenomenon referred to as the coincidence frequency. This is the sound that has the same wavelength in air, as does the bending wave in the panel at the same frequency. This wavelength matching reduces the sound transmission blocking effect of the panel severely. Unfortunately for typical plywood structures, this coincidence frequency occurs at about 1000Hz, which is also the frequency at which most engines have a maximum output of acoustical energy. dB-Ply ,through its efficient damping of bending waves, effectively removes any loss to the sound barrier performance of the panel.

Example

Two enclosures were constructed for 300 HP, engine dynamometer. Plywood panels were used for the exterior of one enclosure and dB-Ply panels were used for the exterior of the other. Both enclosure frames were 2" x 4" construction and the enclosures were lined with the same amount of absorption material. The approximate size of the enclosures were 5' x 6' x 6'.

The graph Figure 4 shows the difference in sound pressure level measured by a microphone inside the enclosure near the center compared to a microphone outside, 8" from the rear side of the enclosure.

Similar curves were obtained for other engine speeds.

• Figure 4 Improvement measured on a Dynamometer enclosure at 1000 rpm

Bending Stiffness

• Figure 5 Bending stiffness of 3/4" dB-Ply compared to 3/4" AB Marine Ply

The dynamic stiffness is reduced when dB-Ply is used instead of normal plywood. This has the effect of changing the resonant frequencies (as seen in Figure 2 above) to a lower pitch as well as reducing the amplitude. In terms of sound quality dB-Ply gives the sound a note of superior quality as the bass tones become louder than the treble tones. Constructions with strong bass tone sound better than those with a tinny high pitched response.

In the case where the design is critical for stiffness at elevated temperatures, the thickness of the dB-Ply system can be increased by 50%. The effective panel stiffness will then be maintained at elevated temperatures and exceeded at normal to low temperatures because the bending stiffness is controlled by the cubic power of the panel's thickness.

Greenwood Forest Products
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Fax: 503 635-5399
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Member of:
NMMA APTA

RFP NO. 4000

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Deviation #: 20 Proposer: New Flyer of America

RFP #: 4000 Page: 157-158 Section: 5.2.1.6.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Stepwell Structure)
Stepwells shall be replaceable as units if they are constructed of non-metallic material.

The steps shall be sloped only sufficiently to preclude water accumulation in the stepwells. All corners in stepwells, which are fiberglass, shall have radii no less than ½ inch.

New Flyer's Deviation/Clarification:

The stepwell to the upper deck on our 35' and 40' buses is constructed of non-metallic composite material and to replace it, you must cut the flooring and to remove all seats, stanchions and modesty panels in the affected area.

On the 60' bus, the stepwell is constructed of plywood covered with floor covering. The stepwell does not have any slope and all edges meet at 90 degrees.

Rationale (Pros & Cons):

Please refer to the attached documentation.

NEW FLYER

PLYWOOD FLOORING (40-FT BUS)

New Flyer offers a bus floor made of XL™ ACQ® NT Bus Panel plywood and ACQ® NT dB-plywood. The base floor is ¾" thick specialty engineered to be used in bus floors.

The plywood is pressure preserved and impregnated with ACQ® preservatives. ACQ® is an environmentally friendly treatment, (EPA compliant) which effectively controls rot. High-grade veneers provide excellent fastening and machining qualities in the fabrication and assembly processes.

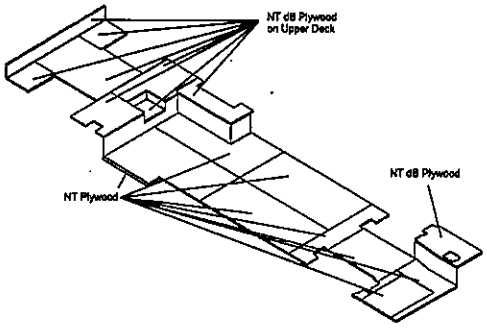
Fastening of seating, flooring and other components are made easy with quality hard wood veneered panels. Panels are manufactured to offer an excellent wear surface for passenger caused, uniform or dynamic loads. The XL™ NT Bus hardwood surfaces are effectively treated and the tight grain structure and minimal seasonal variation in density minimizes the raised grain that can occur in pressure-treated softwoods. The ACQ® NT dB-plywood flooring is incorporated on the rear upper deck of the bus along with the rear bulkhead and the driver's platform. The ACQ® NT dB-Plywood has shown good noise damping capacity.

Specifications:

Item	Measure
Manufacturer	Greenwood Forest Products
Model	XL™ NT Bus Panel
Wood	Group I Western species
Certification	Meets and exceeds US Product Standard PS 1-95 from the Engineered Wood Association (formerly the American Plywood Association)
Gas emissions due to combustion	No significant differences to gases generated by burning untreated wood

Please refer to additional information attached.

NEW FLYER



Flooring material for reference

GREENWOOD FOREST PRODUCTS

XL® BUS PANEL – NO ROT

THE ALTERNATIVE TO EXPENSIVE "MARINE GRADE" PLYWOOD

XL™ Bus Panel exceeds all recommendations of the American Public Transit Association's *Standard Bus Procurement Guidelines*. It is a specialty plywood panel engineered to be used for bus floors. XL™ Bus Panel is a pressure-preserved plywood panel impregnated with ACQ® preservatives. ACQ® is an environmentally friendly treatment, which effectively controls rot without using EPA listed hazardous compounds. Panels are carefully manufactured to maximize strength and flatness while limiting internal voids. Panels are manufactured to the same exacting specifications used in Greenwood's boatbuilding plywood, including marine-grade glue.

PERFORMANCE FEATURES:

XL™ Bus Panels are engineered for the long haul. Washing or hosing of floors will not cause rot in XL™ Bus Panel floor panels. Marine-quality, ACQ® preservative treated plywood insures low maintenance and long-lived floors. High-grade veneers are used to provide excellent fastening and machining qualities in the fabricating and installation processes. Fastening of seating, flooring and other components are made easy with quality veneered panels.

USES:

XL™ Bus Panel can be used wherever structural panels are needed and is especially beneficial where panels will be exposed to moisture. Panels are manufactured to offer an excellent wear surface for passenger- or cargo-caused uniform or dynamic loads. Flooring materials can be effectively and easily fastened to all Greenwood Bus Panel products. Panels are also available with *noise damping properties*: Ask for dB-Ply™ or XL dB-Ply™ from Greenwood Forest Products.

PANEL SPECIFICATIONS:

XL™ Bus Panel is ACQ® treated and kiln dried after treatment. Panels are available ½" and thicker in 4' x 8' and up to 5' x 10' sizes. Other sizes are available upon inquiry. Panels are Group I Western species, allowing no open wood characteristics in face veneers. Cores are tight and 100% exterior grade, laminated with marine-grade resins. All panels have *prepared surfaces* for easy bonding of flooring materials, adding efficiencies for OEMs and longevity for bus or RV owners. XL™ Bus Panels meet or exceed all recommendations of the American Public Transit Association's *Standard Bus Procurement Guidelines*.

Member: APTA

GREENWOOD FOREST PRODUCTS – When quality really counts.

Greenwood Forest Products 15895 S.W. 72nd Avenue, Suite 200 Portland, OR 97224
Phone 503/670-9663 FAX 503/670-7755 WATS 1-800-338-8896

Attn: Wayne Berg

GREENWOOD PRODUCTS, INC.

September 8, 2005

Mr. John Robbard
RJ Millwork
1320-B London Road
Winnipeg, Manitoba R3E 1A4
Canada

Dear John:

This letter is being written to confirm that it is not necessary to seal the cut edges of the XL Bus Panels that Greenwood supplies RJ Millwork for installation in New Flyer buses. Greenwood's XL treating program was developed to assure full penetration and retention of ACQ, the environmentally-friendly preservative that prevents decay and insect damage. We use third party inspection agencies and routine testing to assure that our penetration and retention requirements are met. Greenwood's limited lifetime XL Bus warranty will cover the XL Bus Panels installed in New Flyer buses for as long as the original purchaser owns the bus. If a warrantied XL Bus Panel is rendered unfit for use due to decay, insect damage or manufacturing defect (delamination – failure of glue line) Greenwood will supply a replacement floor panel and reimburse reasonable labor costs. In addition, if the covered loss should occur during the first twelve years the XL Bus Panel warranty is in effect Greenwood would also reimburse the cost of replacement floor coverings, fasteners and adhesives.

Sincerely,

Tom Pritchler

Tom Pritchler

15895 SW 72nd Avenue, Suite 200 • Portland, Oregon 97224
Telephone 503-670-9663 • Toll Free 800-333-3896 • Fax 503-670-7755
www.greenwoodproducts.com

TOTAL P.01

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

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Deviation #: 16 Proposer: New Flyer of America

RFP #: 4000 Page: 155 Section: 5.2.1.4.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Rear Bulkhead)
The panel(s), or sections thereof, shall be openable and hinged with ¼ turn tamperproof fasteners to enable quick and easy access to service components located on the rear bulkhead.

New Flyer's Deviation/Clarification:

The rear bulkhead compartment is secured with ¼ turn 5/16" square keys.

Rationale (Pros & Cons):

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Deviation #: 17 Proposer: New Flyer of America

RFP #: 4000 Page: 156, 157 Section: 5.2.1.5.1, 5.2.1.5.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(FLOOR: Height, FLOOR: Design)
Height of the floor above the street shall be no more than 15 ½ inches measured at the centerline of the front and rear doorway. The floor may be inclined along the longitudinal axis of the bus, and
The incline shall be less than 3 1/2° off the horizontal except locally at the doors where 2° slope toward the door is allowed.

The vehicle floor in the area of the entrance and exit doors shall have a lateral slope not exceeding 2o to allow for drainage.

New Flyer's Deviation/Clarification:

The 60' buses are equipped with a front step height of 16 +/-0.5" inches and the middle and rear door step height of 17" +/-0.5" at ride height with standard 305/70R22.5 tires. Also the entrance and exit areas are not sloped on 60-ft buses.

Rationale (Pros & Cons):

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Deviation #: 18 Proposer: New Flyer of America

RFP #: 4000 Page: 157 Section: 5.2.1.5.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(FLOOR: Design)
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.

New Flyer's Deviation/Clarification:

Where the floor meets the bus walls, the surface edges shall be blended with a circular section of about 1/4-inch radius. In the lower bi-level of the bus, the floor covering material runs several inches up the coved lower sidewall.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 19 Proposer: New Flyer of America

RFP #: 4000 Page: 157 Section: 5.2.1.5.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Floor Protection)
Plywood, if used, shall be no less than ¾-inch thick American Plywood Association, marine grade, 7-ply, finished on both sides, and shall be installed with all edges sealed.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing Greenwood Forest, XL™ ACQ NT Bus Panel ¾ in. Plywood flooring that is undercoated with Corashield for superior protection against the elements.

Greenwood Forest, XL™ ACQ Bus panel does not require sealing of cut edges as it is developed to assure full penetration and retention of ACQ, the environmentally-friendly preservative that prevents decay and insect damage.

Rationale (Pros & Cons):

Please note that the proposed plywood flooring is warranted for 12 years of parts and labor.

Please refer to the attached documentation.

RFP NO. 4000

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Deviation #:	14	Proposer:	New Flyer of America
RFP #:	4000	Page: 155	Section: 5.2.1.4.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Driver's Barrier)
The barrier shall be made of a polycarbonate (dark tint) upper portion and a melamine (color(s) to match other interior melamine panels) lower portion. The driver's barrier shall extend from below the level of the passenger or driver's seat cushion, whichever is lower, to within 1 inch of the ceiling and shall fit the coach side windows.

New Flyer's Deviation/Clarification:

The communications box being proposed (secure diagnostic station-SDS) acts as a barrier between the operator and the street-side front passenger seat which precludes the need for a separate barrier. It is made of fiberglass and painted black to minimize the glare and reflections that may impact the driver's sightline(s).

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #:	15	Proposer:	New Flyer of America
RFP #:	4000	Page: 155	Section: 5.2.1.4.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Modesty Panels)
Modesty panels shall extend no higher than the lower daylight opening of the side windows and those forward of transverse seats shall extend to within 1 ¼ ± ¼ inches of 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 2¼-inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Upper portion of dividers shall be clear ½-inch thick Lexan and extend to within 5 inches of the ceiling. The entire divider can be constructed from melamine with the Lexan inserted in a rubber frame.

New Flyer's Deviation/Clarification:

A modesty panel is not provided rearward of the entrance door as the wheel-well fulfills this requirement. In the rear of the bus, the modesty panels do extend about 6 inches higher than the daylight opening of the side windows, but they do not impact the driver's sightline or prevent passengers from viewing toward the outside of the bus.

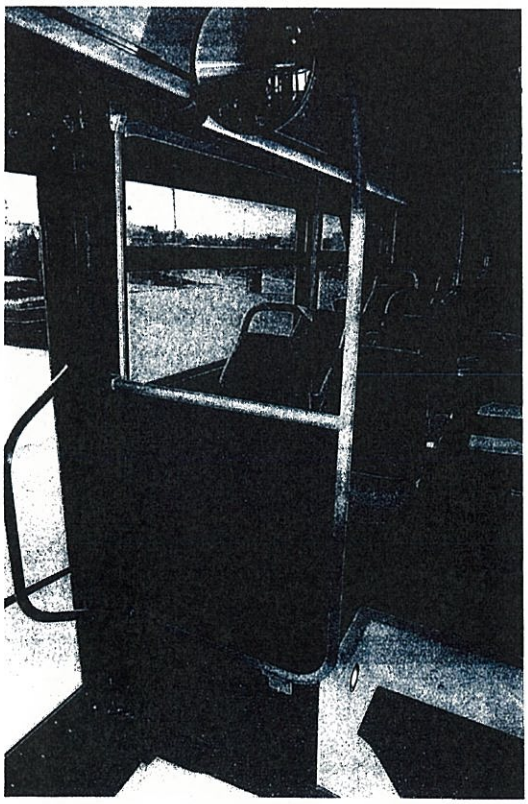
Please note that on 40-ft proposed bus streetside rear upper level front edge the forward facing seats and stanchions function as barrier, which precludes the need for a modesty panel installation.

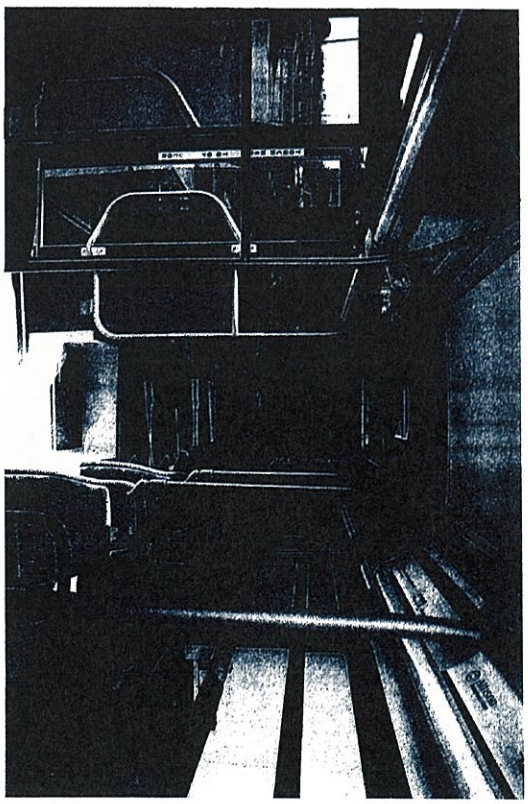
Rationale (Pros & Cons):

Please refer to the attached documentation for 40-ft bus design.

Clarified during 6/7/2010 teleconference:

New Flyer will provide 1/2" lexan windscreens a specified.





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Deviation #: 10 Proposer: New Flyer of America

RFP #: 4000 Page: 152 Section: 5.2.1.2.11

Complete Description of Deviation:

Port Authority Specification Requirement:

(Fire Protection)
The passenger compartment shall be separated from the engine compartment by a solid metal bulkhead(s) which, by incorporation of fire-proof materials in its construction, be a firewall. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall. The conduit and bulkhead connectors shall be sealed with fireproof material at the firewall. Engine access panels in the firewall shall be fabricated of fireproof material and secured with fireproof fasteners

New Flyer's Deviation/Clarification:

New Flyer's firewall is constructed of high tensile steel. The electrical standard bulkhead connectors, which are installed on all of our buses have been proven in thousands of vehicles.

Rationale (Pros & Cons):

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Deviation #: 11 Proposer: New Flyer of America

RFP #: 4000 Page: 153 Section: 5.2.1.3, 5.2.1.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(EXTERIOR AND APPLIED PANELS, Repair and Replacement)
The lower edge shall be protected with a non-metallic filler or the panel shall be crimped closed depending upon the manufacturer's need for the rolled edge. Exterior panels for the entire coach shall be stainless steel type 304 or Approved Equal.

Exterior panels below the rub-rail shall be divided into sections that are repairable or replaceable by a 3M Mechanic in less than 30 minutes for a section up to 5 feet long (excludes painting).

New Flyer's Deviation/Clarification:

The 35' and 40' buses are equipped with fiberglass exterior lower panels which are pre-primed and 5052 H36 aluminum panels on 60' bus, which are bonded into place using adhesives.

The replacement time would take about 3 hours to repair and replace a section up to 5' long.

Rationale (Pros & Cons):

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Deviation #: 12 Proposer: New Flyer of America

RFP #: 4000 Page: 154 Section: 5.2.1.3.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Rubrails)
Rub-rails composed of flexible, resilient material shall be provided to protect both sides of the coach body from damage caused by minor sideswipe accidents with automobiles. Rubrails shall.....

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing low floor buses not equipped with rubrails. New Flyer also wishes to advise that rubrails prevent attachment of exterior ad frames.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 13 Proposer: New Flyer of America

RFP #: 4000 Page: 154 Section: 5.2.1.4.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Headroom)
Headroom above the aisle and at the centerline of the aisle seats shall be no less than 78 inches.
At the centerline of the window seats, headroom shall be no lower than the required top of the side window. Headroom at the back of the rear bench seat may be reduced to a minimum of 56 inches, but it shall increase to the normal ceiling height at the front of the seat cushion.

New Flyer's Deviation/Clarification:

The rear upper area has an interior headroom of 76" inches. The centerline of the window seats have a headroom no lower than 61" inches.

Rationale (Pros & Cons):

These dimensions are inherent to the New Flyer's proposed 60-ft bus design.

13. VEHICLE TOWING

13.1. Description

Front flat towing is the recommended procedure for the low floor vehicle, using towing adapter kit shown. See "Fig. GI-16: Towing Adapter" on page 30. The method used will vary depending on the type of towing equipment at the disposal of the transit company. Rear towing is not a recommended procedure for the low floor vehicle due to insufficient ground clearance and the problem of locking the front wheels in a straight position. If the transit authority has its specific towing procedures, compare them carefully with the following.

⚠ CAUTION:

Care must be taken to ensure that the vehicle will not suffer structural or articulated joint mechanism damage as a result of towing. Therefore, only flat towing from the front is recommended.
When towing, the driveshaft or both rear axle shafts must be removed, regardless of distance or speed traveled to prevent damage and voiding of warranty to the power train components.

NOTE:

An auxiliary air supply must be provided to the vehicle being towed to hold off the spring brakes and maintain suspension height. The auxiliary air supply should be a minimum of 100 psi. The auxiliary air connections are located in the center, in back of the front bumper. The engine cannot be started by pushing or towing the vehicle.

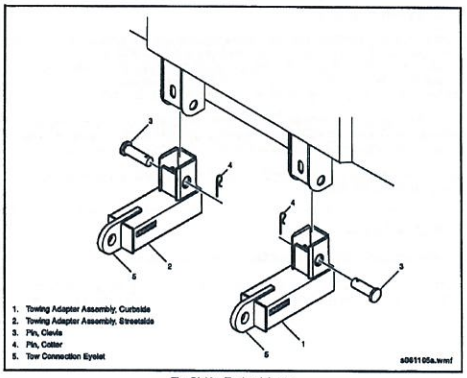


Fig. GI-16: Towing Adapter

13.2. Safety Precautions

1. Follow all State (provincial in Canada) and local traffic regulations regarding such items as warning signals, night illumination, speed and so forth.
2. A safety restraint system must be used that is independent of the primary lifting and towing attachments.
3. All loose or protruding parts of a damaged vehicle should be secured prior to towing.
4. Do not go under a vehicle which is being lifted by the towing equipment, unless the vehicle is adequately supported by safety stands or appropriate blocking.
5. No towing operation should be attempted for any reason which jeopardizes the safety of the operator, wrecker, bystanders or other motorists.
6. Do not exceed the recommended maximum speed of 35 mph (55 km/h) while towing.

13.3. Drive Shaft Removal

13.3.1. Safety Precautions

Ensure the vehicle is appropriately lifted and supported, and know the limitations of the lifting and blocking equipment. Always ensure that jarring and shaking created by component removal does not cause the vehicle to become unstable.

⚠ WARNING:

DO NOT attempt to lift or jack the vehicle on an incline, rough or uneven surface.

DO NOT use inadequate lifting or blocking methods. They can result in the vehicle falling off the lifting or blocking equipment, causing severe injury or death to service personnel.

DO NOT allow individuals to board the vehicle while supported solely by the lifting or blocking equipment.

DO NOT run engine or engage drive unit while vehicle is resting on lifting or blocking equipment.

13.3.2. Lifting & Supporting Vehicle

1. Ensure vehicle is positioned on a stable, level surface.
2. Ensure front wheels are facing forward and chocked in position.
3. Raise vehicle to facilitate removal of drive shaft and place safety stands or appropriate blocks at designated locations to support vehicle at this height. Refer to "Raising the Vehicle" in this section for jack stand locations.

⚠ WARNING:

Ensure each safety stand or block is precisely the same height and sitting completely level.

4. Lower vehicle slowly and carefully until it comes to rest on the safety stands or blocking.

13.3.2.1.Removal Procedure

NOTE:

Tie up heavy drive shafts with a nylon support strap.

1. Remove drive shaft guard.
2. Disconnect drive shaft from drive unit and differential yokes. Refer to Section 2 of this manual for more detailed information on drive shaft removal.

NOTE:

To prevent bearing caps from sliding off universal joint, tape or wire them in place.

3. Remove drive shaft from under vehicle.
4. Raise vehicle to facilitate removal of safety stands or blocking.
5. Lower vehicle slowly and carefully.
6. Store drive shaft in an area on the vehicle that will prevent damage to the drive shaft and surrounding area of the vehicle in which it is stored.
7. Vehicle is now ready for towing.

13.4. Rear Axle Shaft Removal

NOTE:

Refer to Section 2 of this manual for detailed information and illustrations for axle housing draining, filling and axle shaft removal.

1. Push or pull disabled vehicle forward or back until planetary gear housing drain plug is positioned on bottom of axle housing.
2. Attach oil drain chute to planetary gear housing.
3. Position a clean adequate capacity container to capture oil, under oil drain chute.
4. Remove both oil drain and filler plugs.

NOTE:

Save used oil for reuse. Refill capacity of each planetary gear housing is 0.5 U.S. gallons (1.9 liters).

5. Remove planetary gear housing bolts and cover.

NOTE:

Examine cover gasket for damage. Replace if necessary.

6. Screw support handle into axle shaft (M8 x 120 mm bolt). Support handle is item 17 from Special Tool List in Section 2 of this manual.
7. Remove axle snap ring, and shims from center of hub (item 18 from Special Tool List in Section 2 of this manual).
8. Pull axle shaft with sun gear and thrust bearing assembly out of axle housing.

NOTE:

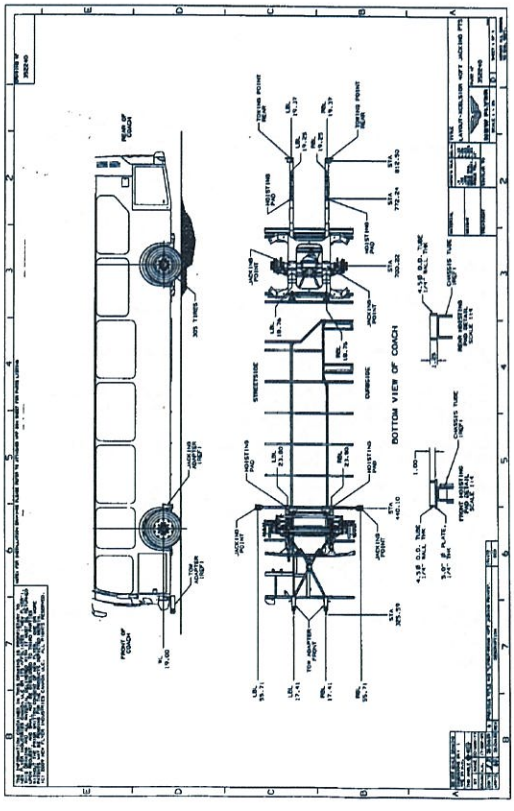
Label axle shaft, snap ring, shims, and thrust bearings and washers, left or right side. The parts are to be installed in the same axle side they were removed from because of the wear pattern.

9. Store axle shaft and parts in an area inside the vehicle that will prevent damage to the axle shaft and parts and surrounding area of the vehicle where they are stored.
10. Install planetary gear housing cover with drain plug opening positioned to the top of the axle housing and tighten planetary gear housing cover bolts.

NOTE:

Positioning the drain plug opening at the top of the axle housing allows for air displacement for easier and faster refilling of gear oil.

11. Install and tighten planetary gear housing filler and drain plugs.
12. Add saved oil using oil filler funnel.
13. Repeat procedure for opposite axle shaft.
14. Vehicle is now ready for towing.



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Rationale (Pros & Cons):

New Flyer has Altoona tested our proposed 60' articulated coach platform on several occasions and while we have never specifically tested the bus to your PSI requirement, we are operating the vehicle in more severe applications that what is proposed. Those areas include Baltimore, Washington, D.C., etc. We have over 4,000 articulated coaches in revenue service, more than all other manufacturer's combined.

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Deviation #: 7 Proposer: New Flyer of America

RFP #: 4000 Page: 148 Section: 5.2.1.2.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Material)
Structural material and body skin for the entire coach shall be stainless steel type 304 or Approved Equal.

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing a frame structure with a semi-monocoque design. The body construction using high strength low alloy steel sheet and plate (ASTM A242, A588, A606, A568, CSA G40.21 44W, 50A, 50W) and structural tube and channel (ASTM A500, CSA G40.21 50A, 50W) for structural strength and durability. All joints shall be welded. The fasteners are mixtures of zinc-coated steel and stainless steel, depending on the application requirements.

Also on the 40-ft buses, exterior body panels are made of fiberglass below window bottom line and aluminum panels between windows and on 60-ft buses, exterior body panels are made of Aluminum panels except fiberglass panels installed at upper deck windows bottom.

Interior and exterior structural components are subject to New Flyer's extensive standard corrosion protection procedures.

Rationale (Pros & Cons):

The proposed structure is provided with a 12-year structural warranty.

Please refer to attached information regarding the proposed structure, corrosion prevention, warranty details and exterior body panels under Section 4 Tab 4 – C (for 60-ft and 40-ft).

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Deviation #: 8 Proposer: New Flyer of America

RFP #: 4000 Page: 148 Section: 5.2.1.2.6.1, 5.2.1.2.6.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Fasteners; General, Testing Options)
The Contractor shall procure and deliver fasteners made in the United States for use in the coach manufacturing process.

At a minimum, Grade 5 bolts shall be used in all areas where 1/4-inch or larger bolts are required.

Grade 8 bolts, nuts, flat and lock washers shall be used as recommended by SAE for critical applications such as: steering, brakes, suspension, etc. The bus manufacturer shall make available a list of locations where Grade 8 bolts are used.

All items covered by this specification shall conform to applicable S.A.E., U.S.S., or Metric standards and shall be of U.S. manufacture.

No counterfeit fasteners will be permitted.
The Contractor shall, upon request by Port Authority, produce the manufacturer's test, traceability requirements, and certifications for the following:

New Flyer's Deviation/Clarification:

All of our fasteners are to recognized industry standards (ASME, ASTM, SAE, DIN, ISO, IFI) and are, for the most part, off-the-shelf.

As New Flyer also recognizes the need for standardization it is required that our component suppliers adhere to the same standards.

Rationale (Pros & Cons):

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Deviation #: 9 Proposer: New Flyer of America

RFP #: 4000 Page: 151-152 Section: 5.2.1.2.8, 5.2.1.2.10

Complete Description of Deviation:

Port Authority Specification Requirement:

(Towing, Hoisting)
Two towing devices shall be provided on each end of the coach. Coaches must have the capability of being towed by a wheel lift type tow apparatus or the standard load equalizing sling type tow equipment.
The towing devices shall allow the use of a rigid tow bar and shall permit lifting of the coach, at curb weight, by the towing devices and/or tow bar until the front wheels are clear of the ground.

The cleat configuration shall mate to the recommended lift point on the coach. The cleats shall fit Rotary hoist in use at Port Authority. The value of the two different style cleats is essentially the same.

New Flyer's Deviation/Clarification:

Towing can be performed from the front of the coach only with the use of an adapter. Towing from the rear is not recommended; but provisions are made in the rear frame that would allow short distance flat towing only. Towing shall be in accordance with New Flyer's standard towing procedures.

Rationale (Pros & Cons):

Please refer to attached documentation.

Revised during 6/7/2010 teleconference:

New Flyer will supply three (3) sets of towing adapters.

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

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Deviation #: 3 Proposer: New Flyer of America

RFP #: 4000 Page: 264 Section: 5.1.4.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Curb Weight)
Curb weight shall not exceed 46,500 lbs. Each coach shall be delivered with a weight certificate showing the curb weight of that vehicle. For each pound in excess of 46,500 lbs., $5.00 will be deducted from the invoice for that vehicle.

New Flyer's Deviation/Clarification:

New Flyer's 60' diesel-hybrid bus has an estimated bus weight of 47,250 +/-475 lbs.

Rationale (Pros & Cons):

Please note that the hybrid battery package and 2010 EPA compliant engine components increase bus weight.

Revised during 6/7/2010 teleconference:

Port Authority specification section 5.4.4.2 is herby revised to be 48,000 lbs for a diesel-electric hybrid articulated bus.

RFP NO. 4000

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Deviation #: 4 Proposer: New Flyer of America

RFP #: 4000 Page: 144 Section: 5.2.1.1.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Finish and Color)
The vehicle is to be painted using Imron® Elite
polyurethane Basecoat/Clearcoat system consisting of primer, Elite BC and Elite 8840S Clearcoat

New Flyer's Deviation/Clarification:

New Flyer utilizes DuPont Imron's® Elite 8420s in lieu of specified 8840s. Elite 8420s is used with the better advance Elite express paint.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 5 Proposer: New Flyer of America

RFP #: 4000 Page: 146-147 Section: 5.2.1.1.8

Complete Description of Deviation:

Port Authority Specification Requirement:

(Advertising)
The areas on the sides should measure 30 x 144 inches. If there is insufficient space on the curb side, a 30 x 108-inch free space shall then be provided. The manufacturer shall provide a smooth surface on the rear of the bus for mounting the largest standard size adhesive-type sign commercially available on the rear of the coach.

New Flyer's Deviation/Clarification:

The space available for installing ad frames are as follows:

40-ft Bus
Curbside: 30"x144" or 30" x 108" depending space availability
Streetside: 30"x144"
RR: Approximately 16"x66"

D60LFR
Curbside: 30"x72" (Please note that due to the requirement for two exit doors there is a space limitation)
Streetside: 30" x144"
RR: Approximately 20"x 75"

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 6 Proposer: New Flyer of America

RFP #: 4000 Page: 147 Section: 5.2.1.2.2

Complete Description of Deviation:

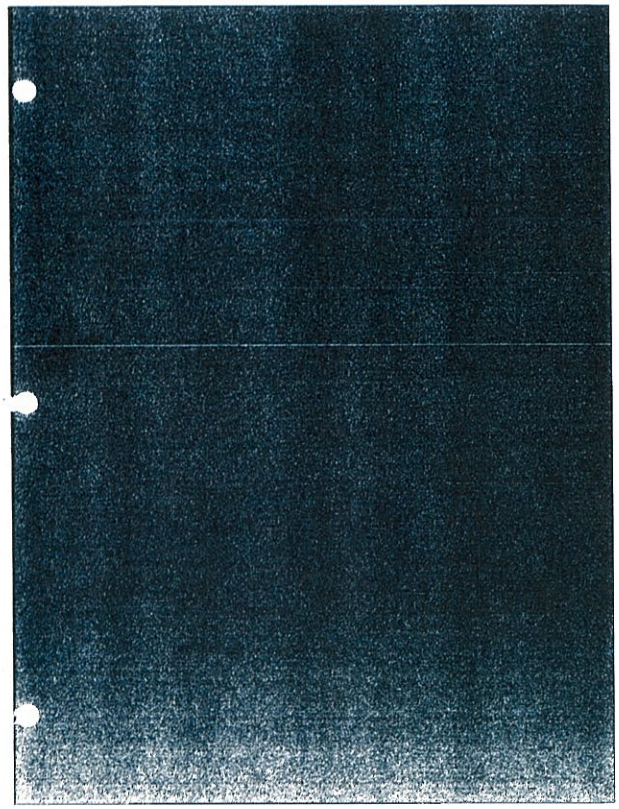
Port Authority Specification Requirement:

(Strength and Fatigue Life)
The structure shall also withstand sustained impact loads up to 16,000 psi due to street travel in Port Authority's service area throughout the expected twelve-(12) year service life of the coach without permanent deformation, damage or failure of the structure.

New Flyer's Deviation/Clarification:

New Flyer structural engineers advise that "sustained impact loads up to 16,000 psi" is an undefined criteria.
The 40-ft Xcelsior, in a CNG configuration, has been designed and tested to last 500,000 miles in New York, route B35 service. We have determined this is approximately equivalent to 588,000 miles in Baltimore, and approximately equivalent to six (6) full Altoona durability tests. Over many years of testing, we have not found any duty cycle to be worse than the New York environment. Diesel and hybrid configurations are more lightly loaded than the CNG configuration, and are expected to have a longer life in any comparable service. The impact loads on a vehicle are influenced by both the road service, speed and other environment conditions as well as the vehicle suspension. New Flyer is confident that the Xcelsior is suitable for Port Authority Service, and propose the following:

Coaches of the Port Authority will be operated throughout the entire service area of Allegheny County and surrounding contiguous counties. They shall operate under conditions encountered in transit service in Port Authority service areas throughout the expected twelve-(12) year service life of the coach. The coach design shall incorporate all severe service, heavy-duty features which shall enable the basic structure to withstand fatigue damage that is sufficient to cause Class 4 major failure. The structure shall also withstand sustained impact loads up to 16,000 psi due to street travel in Port Authority's service area throughout the expected twelve-(12) year service life of the coach without permanent deformation, damage or failure of the structure. The structure is considered to be frame, support braces, spines, bulkheads, and outer coach shell. Failure is defined as any structural fatigue damage resulting in a Class 4 out-of-service condition



NEW FLYER

TECHNICAL DEVIATIONS & CLARIFICATIONS

RFP NO. 4000

EXHIBIT 2

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Deviation #: 1		Proposer:	New Flyer of America
RFP #: 4000	Page: 139	Section:	5.1.4.1.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Physical Size)
Length: 40 feet, 0 inches (+0, -3 inch)
Height: 10 feet, 3 inches (+0, -5 inch)

Not Applicable

New Flyer's Deviation/Clarification:

New Flyer's Xcelsior platform has a body length of 40' 2" +/- 1" and an overall length of 41' +/- 1".

The overall height of the diesel bus is 10' 6" +/-0.5" and 10' 10" +/-0.5" for a diesel-hybrid configuration.

Rationale (Pros & Cons):

These dimensions are inherent to the New Flyer's proposed bus design.

RFP NO. 4000

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Deviation #: 2		Proposer:	New Flyer of America
RFP #: 4000	Page: 140	Section:	5.1.4.1.1 (2) & (3)

Complete Description of Deviation:

Port Authority Specification Requirement:

(Ground Clearance, Axle Clearance)
Ground clearance shall be no less than 10 inches except within the axle zone and wheel area.

Axle zone clearance, which is the projected area between tires and wheel on the same axial centerline, shall be no less than 5-1/2 inches.

New Flyer's Deviation/Clarification:

The ground clearance is 8" inches at the jacking pad, and reduces to 5.6" inches at the axle zone.

Rationale (Pros & Cons):

These dimensions are inherent to the New Flyer's proposed bus design.

RFP NO. 4000

EXHIBIT 2

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Deviation #: 26 Proposer: New Flyer of America

RFP #: 4000 Page: 253 & 254 Section: 5.5.3.2 & 5.5.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Maintenance & Parts Manuals)
Fifteen (15) manuals shall be provided. Thirty (30) additional copies of the manual shall be produced with laminated pages.

New Flyer's Deviation/Clarification:

In an effort to reduce the amount of paper printed and overall cost of hard copy manuals, New Flyer proposes to supply only 5 copies each on regular paper and on synthetic plastic paper (waterproof and durable)

Additional copies can be purchased through the parts order desk if required at a later date.

Best & Final Offer Revision:
Please remove this deviation. Our initial proposal was compliant to your publications/manuals requirements, and within our Price Proposal submission, we quoted the cost reduction associated with the suggested revision(s) above.

The Form for Cost Reduction Opportunities can be found at the end of our Best and Final Offer price proposal submission.

Rationale (Pros & Cons):

[BAFO -Deviation]

RFP NO. 4000

EXHIBIT 2

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Deviation #: 27 Proposer: New Flyer of America

RFP #: 4000 Page: 253 & 254 Section: 5.5.3.2 & 5.5.3.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Maintenance & Parts Manuals)
Fifteen (15) component specific maintenance manuals i.e.; engine, transmission, air conditioning, wheelchair ramp, destination sign, etc., shall be provided by the OEM for the appropriate unit as installed on vehicles covered under the contract. Thirty (30) additional copies of these manuals shall be produced with laminated pages. Copyright release shall be provided for component specific manuals to allow Port Authority to copy these manuals.

New Flyer's Deviation/Clarification:

In an effort to reduce the amount of paper printed and overall cost of hard copy manuals, New Flyer proposes to supply only 5 copies each on regular and synthetic plastic pages. OEM supplier Engine, Allison transmission and HVAC manuals are not available in plastic pages.

Additional copies can be purchased from each OEM supplier at a later date.

Obtaining agreements for release of copyright restrictions for reproduction on OEM supplier manuals is the responsibility of the Port Authority.

Best & Final Offer Revision:
Please disregard part of this deviation. Our initial proposal was compliant to your publications/manuals requirements in terms of quantities of manuals, and within our Price Proposal submission, we quoted the cost reduction associated with the suggested revision(s) above.

The Form for Cost Reduction Opportunities can be found at the end of our Best and Final Offer price proposal submission.

NOTE: The following language is still valid and a deviation is required to your specification:

OEM supplier Engine, Allison transmission and HVAC manuals are not available in plastic pages.

[BAFO -Deviation]

RFP NO. 4000

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Deviation #: 28 Proposer: New Flyer of America

RFP #: 4000 Page: 254 Section: 5.5.3.4

Complete Description of Deviation:

Port Authority Specification Requirement:

(Drawings)
The Contractor shall also furnish drawings for each of the bus windows. These shall show dimensions (with tolerances) of bare glass for the purpose of having replacement glass manufactured.

New Flyer's Deviation/Clarification:

New Flyer does not supply this proprietary information. New Flyer supplies replacement part numbers and an illustration within the parts manual.

Rationale (Pros & Cons):

Revised during 6/7/2010 teleconference:

New Flyer will provide 'glass prints' as specified.

RFP NO. 4000

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Deviation #: 29 Proposer: New Flyer of America

RFP #: 4000 Page: 254 Section: 5.5.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Changes and Revisions)
Following the publication of each manual required herein, the Contractor shall provide revisions covering any changes, whether required by change of design or procedures or due to error, and these revisions shall be kept current during the entire basic warranty period. Manual revisions shall be furnished to Port Authority before or coincidental with the arrival of any altered parts or components. Upon expiration of the basic warranty period, revisions shall be furnished to Port Authority, free of charge, as required until the bus is twelve (12) years old.

New Flyer's Deviation/Clarification:

New Flyer will supply revisions for all New Flyer Bus Manuals only. New Flyer will supply the most current version of each OEM component supplier manual. It is the responsibility of each OEM component supplier to make available revisions to their manuals for the Port Authority. New Flyer does not manage this process.

New Flyer will supply updates for New Flyer Bus Parts Manuals for a period of 12 years after final manual issue.

New Flyer will supply updates for New Flyer Bus Operators and Service Manuals for a period of 6 years after final manual issue.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 22 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Electronic Media)
Also, all material contained in all manuals shall be placed on electronic media, i.e. computer software or equivalent, shall be menu driven and generally follow the paper manuals. The electronic data must be compatible with the Authority's computer software program.

New Flyer's Deviation/Clarification:

New Flyer Bus Manuals will be supplied only in PDF format.

When available, OEM supplier manuals are only available in PDF format. New Flyer will provide what is made available however it is important to note that all copyright restrictions on the use of the files and must be followed.

Rationale (Pros & Cons):

Clarified during 6/7/2010 teleconference;

Port Authority requires the ability to separate bus manuals into smaller files, usually based on topic, to accommodate our internal electronic document distribution practices.

RFP NO. 4000

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Deviation #: 23 Proposer: New Flyer of America

RFP #: 4000 Page: 250 Section: 5.5.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Manual Organization)
The coach shall be treated as a whole and not as a grouping of disassociated parts. The material in all manuals and the parts catalogs shall be similarly organized and indexed in accordance with thefollowing numbering system:

New Flyer's Deviation/Clarification:

New Flyer Bus Parts and Service Manuals are organized in a similar structure but cannot be re-organized to the Port Authority's structure. This is due to the amount of work involved and the relationship of our current structure to the source data.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 24 Proposer: New Flyer of America

RFP #: 4000 Page: 251-252 Section: 5.5.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Documentation)
All drawings, publication, catalogs and manuals including Training Materials required under this Specification shall be furnished in electronic form in addition to the form specified elsewhere in Port Authority of Allegheny County 252 this Specification. Electronic versions of these documents shall be furnished concurrent with
their submittal in hard copy form. The drawings shall be furnished in an electronic format compatible with the latest version of AutoCAD. Catalogs, publications manuals, lesson plans and training materials shall be furnished in the Adobe Acrobat electronic (both authoring and PDF) format. Two (2) sets of all documents in electronic format shall be provided.

New Flyer's Deviation/Clarification:

For electronic document supply, New Flyer Bus Manuals will be supplied in PDF format only. These files can be released for editing after the Port Authority signs a delivers the New Flyer limited license agreement. This includes drawings which are not available in Autocad format. New Flyer manuals must not be displayed or accessible via Internet, only a secure Intranet.

OEM supplier manuals that are available in PDF format will all contain copyright restrictions on the use of the files and must be followed. Editable electronic files from OEM suppliers are not available.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 25 Proposer: New Flyer of America

RFP #: 4000 Page: 252 Section: 5.5.3

Complete Description of Deviation:

Port Authority Specification Requirement:

(Documentation)
It is the Contractor's responsibility to secure and make whatever agreements are required to transfer component text and drawings to electronic media. When electronic media is delivered as part of this Contract, the Contractor shall supply the information with a site license agreement with no limitation(s) for reproduction or use by Port Authority within usual business practices.

New Flyer's Deviation/Clarification:

For electronic document supply, New Flyer Bus Manuals will be supplied in PDF format only. These files can be released for editing after the Port Authority signs a delivers the New Flyer limited license agreement. This includes drawings which are not available in Autocad format. New Flyer manuals must not be displayed or accessible via Internet, only a secure Intranet or network.

OEM supplier manuals that are available in PDF format will all contain copyright restrictions on the use of the files and must be followed. Editable electronic files from OEM suppliers are not available. Obtaining agreements for release of copyright restrictions on OEM supplier manuals is the responsibility of the Port Authority.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 18		Proposer:	New Flyer of America
RFP #: 4000	Page: 250	Section:	5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Manual format)
The publications shall be designed for continuous, long term service and employ a loose leaf design which shall accommodate revisions to the manuals. All covers shall be heavy-duty, resistant to oil, moisture, and wear to a high degree commensurate with their usage. Line drawings required are to be reduced in size.

New Flyer's Deviation/Clarification:

New Flyer Bus Draft Manuals will be supplied as per format specification. OEM supplier published manuals can only be supplied as made available by each OEM supplier.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 19		Proposer:	New Flyer of America
RFP #: 4000	Page: 250	Section:	5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Sample Manual)
Six weeks after notice to proceed (NTP) the
Contractor shall deliver two (2) basic maintenance, parts, and operator's manuals to Port Authority. These manuals should represent the Contractor's standard bus in the general configuration that Port Authority has ordered.

New Flyer's Deviation/Clarification:

New Flyer will supply Sample manuals on CD for this requirement. The sample manual will be a copy of a previous customer's bus manuals similar in bus model only.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 20		Proposer:	New Flyer of America
RFP #: 4000	Page: 250	Section:	5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General –Manual Review)
Additionally, Port Authority will review the manuals for format, quality, clarity, and completeness. Information from this review will be given to the Contractor to assist in the formulation of the final customized manuals.

New Flyer's Deviation/Clarification:

New Flyer Bus Manuals are open for review of content completeness and accuracy only. Organization, structure, writing style and format are set and not open for change.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 21		Proposer:	New Flyer of America
RFP #: 4000	Page: 250	Section:	5.5.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(General – Parts Listing)
A preliminary Bill of Materials (build list)/vendor cross reference list, recommended spare parts list, and a recommended tool and equipment list shall be supplied as soon as available but prior to delivery of the pilot bus for initial review.

New Flyer's Deviation/Clarification:

A parts listing including recommended stocking can only be supplied with Pilot bus as it will be generated from the Draft Parts Manual which will be published for Pilot Bus.

Rationale (Pros & Cons):

MARCH

LIMITED PRODUCT WARRANTY

CD-14134 REV 1.0

[BAFO]

RFP NO. 4000

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Deviation #: 15 Proposer: New Flyer of America

RFP #: 4000 Page: 212 Section: 5.3.1.3.1

Complete Description of Deviation:

Port Authority Specification Requirement:

(Engine)
Engine Starter shall be warranted for a period of three years

New Flyer's Deviation/Clarification:

New Flyer's proposal is based on providing a 1 year/100,000 miles (whichever occurs first) Delco (parts only) warranty. If the Port Authority elects to purchase the optional warranty quoted within Exhibit #11, this deviation can be removed.

Rationale (Pros & Cons):

RFP NO. 4000

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Deviation #: 16 Proposer: New Flyer of America

RFP #: 4000 Page: 213 Section: 5.3.1.3.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Cooling System)
Radiators of welded tank construction are only acceptable with a 12 year warranty.

New Flyer's Deviation/Clarification:

New Flyer proposal is based on providing a 1 year/50,000 miles (whichever occurs first) Thermasys Radiator warranty.

Best & Final Offer Revision:
The warranties for either the baseline all-electric or optional hydraulic cooling systems are clarified below:

- EMP (All Electric) = 2 years/100,000 miles (100% parts and labor)
- General Thermasys (Hydraulic) = 2 years/100,000 miles (parts and labor – NOTE: labor is covered up to three (3) hrs. per claim and must be pre-authorized before repair is performed.)

Rationale (Pros & Cons):

[BAFO -Deviation]

RFP NO. 4000

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Deviation #: 17 Proposer: New Flyer of America

RFP #: 4000 Page: 232 Section: 5.3.6.6.2

Complete Description of Deviation:

Port Authority Specification Requirement:

(Batteries)
Warranty - 24 months from date coach first placed in service by Port Authority

New Flyer's Deviation/Clarification:

The battery warranty is 1 year 50,000 miles (whichever occurs first) and the property must deal directly with battery manufacturer for any warranty issues. New Flyer will cover labor only.

Rationale (Pros & Cons):

Clarified during 6/7 teleconference and review of Port Authority current battery supply contract.

Warranty for the coach batteries is for a period of 24 months

RFP NO. 4000

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Deviation #: 11 Proposer: New Flyer of America

RFP #: 4000 Page: 131 Section: 4.8.3.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Reimbursement for Parts)
Port Authority shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The Port Authority reserves the right and the discretion to specify the reimbursement method or type; credit, check, parts, etc. The reimbursement shall be at the Contractor's list price cost of the part(s) at the time of repair and shall include taxes where applicable, and 25% of the part costs to cover part handling. If the part(s), when requested as reimbursement, are not available from the Contractor within the time limit (See Section 4.8.3.1), the Port Authority reserves the right to acquire parts and charge the Contractor the invoice price.

New Flyer's Deviation/Clarification:

New Flyer will cover a 15% handling charge to a maximum amount of $100 per claim. To assess a 15% or greater charge on large dollar value components is punitive and does not represent the true costs of administering the claim (paperwork).

Rationale (Pros & Cons):

Revised during 6/7/2010 teleconference:

New Flyer will cover a 15% handling charge to a maximum amount of $250 per claim.

RFP NO. 4000

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Deviation #: 12 Proposer: New Flyer of America

RFP #: 4000 Page: 131 Section: 4.8.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Reimbursement to Port Authority)
The Contractor shall, in a timely manner, reimburse Port Authority for all claims submitted and approved. Any and all claims submitted by Port Authority shall either be approved or denied within sixty (60) days of their receipt by the Contractor.
Any and all claims not denied by the Contractor shall be paid to Port Authority within sixty (60) days of receipt by the Contractor. All warranty claims unpaid sixty (60) days after the invoice date will be charged one and a half (1½) percent per month until the claim is paid.
Port Authority shall be supplied with written explanation for all denied claims within sixty (60) days of their receipt of said claim by the Contractor or said claim will be paid in full by Contractor.

New Flyer's Deviation/Clarification:

New Flyer will pay all valid warranty claims within sixty (60) days from the date that the failed components are received by New Flyer.

Rationale (Pros & Cons):

Revised during 6/7/2010 teleconference:

Port Authority Specification language remains. Deviation/ Clarification withdrawn.
Provided that failed parts are returned by Port Authority within

RFP NO. 4000

EXHIBIT 2

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The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 13 Proposer: New Flyer of America

RFP #: 4000 Page: 180 Section: 5.2.3.2.5

Complete Description of Deviation:

Port Authority Specification Requirement:

(Wheelchair Restraint)
The wheelchair restraint system shall be warranted against operational problems resulting from manufacturing and/or design defects. Each restraint unit shall be serialized for warranty tracking purposes.

New Flyer's Deviation/Clarification:

New Flyer does not track serialized restraint systems for warranty purposes and we would like to discuss their requirement with the Port Authority to better understand why this is required.

Rationale (Pros & Cons):

RFP NO. 4000

EXHIBIT 2

FORM FOR PROPOSAL DEVIATION

The following form shall be completed for each condition, exception, reservation or understanding ("deviation") set forth in the Proposal. One copy without any price/cost information shall be placed in the Appendix to the Proposed Booklet and a separate copy with any price/cost information attached to the Summary of Prices submitted with the Proposal.

Deviation #: 14 Proposer: New Flyer of America

RFP #: 4000 Page: 207 Section: 4.2.6.8.8

Complete Description of Deviation:

Port Authority Specification Requirement:

(Service (Video Surveillance System))
Telephone troubleshooting service shall be available 8:00 am to 5:30 pm CST, Monday through Friday and on weekends and holidays. For system failures which are not user or site serviceable, field swap service shall be available within 48 hours.

New Flyer's Deviation/Clarification:

The Port Authority's specified camera system supplier March Networks requires all clients to deal directly with them on any/all warranty issues. If March fails to provide the level of service required by The Port Authority, please inform New Flyer and we will work to remedy the situation as quickly as possible.

Please refer to the attached warranty parchment from March Networks. It highlights all of the warranty inclusion/exclusions, etc.

Best & Final Offer Revision:
Warranty parchment has been attached and was not provided with our original proposal submission.

Rationale (Pros & Cons):

[BAFO -Deviation]

CHANGE	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	1		PASSENGER SEATS	R&R
	0.6		BELLOW CLOSEOUTS (Interior skirt)	R&R
	0.5		INTERIOR OVERHEAD MATERIAL	R&R
	0.7		EXTERIOR BELLOW EXTRUSION (Rubber strip)	R&R
	1		UNDERSIDE HARDWARE & CLOSURE	R&R
	0.8		CABLES	R&R
	3.5		BELLOWS (Front coach, hoop assembly & rear of coach)	R&R
				R&R
HUBNER	5Hr. X 2	21	HUBNER RUBBER BEARING (KNUCKLE)	
	0.6		PASSENGER SEATS	R&R
	0.5		BELLOW CLOSEOUTS (Interior skirt)	R&R
	0.5		INTERIOR OVERHEAD MATERIAL	R&R
	0.6		EXTERIOR BELLOW EXTRUSION (Rubber strip)	R&R
	0.7		UNDERSIDE HARDWARE & CLOSURE	R&R
	0.5		CABLES	R&R
	0.3		BELLOWS AT FRONT OF COACH	R&R
	0.4		DECK PLATES	R&R
	0.3		CLAMPING BLOCK BOLTS	R&R
	0.3		BEARING BOLTS	R&R
	0.2		TORQUE TO SPEC	Torque
ATG	1	21	FLOOR PLATE ACCESS	
	0.8		JOINT PASSENGER SEATS	R&R
	0.2		FLOOR PLATES (LIFT / SECURE)	ACCESS
ATG	1.3	21	OPEN BELLOWS	
	0.4		HIP BOOT FLANGE PLATES (2)	R&R
	0.2		BUCKLE STRAPS	DISCONNECT
	0.2		RETAINING STRIP	R&R

CHANGE	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.3		TURNBUCKLE ASSEMBLY	R&R
	0.2		SHOCK CORD ASSEMBLY	DISCONNECT
ATG	4	21	BELLOWS ASSEMBLY - ONE SIDE	
	0.4		HIP BOOT FLANGE PLATES (2)	R&R
	0.2		BUCKLE STRAPS	DISCONNECT
	0.2		RETAINING STRIP	R&R
	0.3		TURNBUCKLE ASSEMBLY	DISCONNECT
	0.2		SHOCK CORD ASSEMBLY	DISCONNECT
	0.2		TIE ROD ASSEMBLY	DISCONNECT
	2.5		BELLOWS SECTION	R&R
ATG	6.3	21	CENTER HOOP ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	0.3		HOOP CONTROL	DISCONNECT
	0.4		ROLLER ASSEMBLY	R&R
	0.4		BEARING, CENTER HOOP	R&R
	1		CENTER HOOP	R&R
	3.2		WRIST JOINT ASSEMBLY	R&R
ATG	3.5	21	WRIST JOINT ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.3		OPEN BELLOWS FOR SERVICE	ACCESS
	0.3		BOLT, 20MM X 2	R&R
	0.3		BOLT, 5 / 8" X 6	R&R
	0.6		WRIST JOINT	R&R
ATG	3.5	21	HYDRAULIC CYLINDER ASSEMBLY	R&R

CHANGE	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.5		HYDRAULIC SYSTEM, COMPLETE BLEED / FILL / ADJUST	CHK / ADJ.
	0.2		CYLINDER HOSE X 2	DISCONNECT
	0.3		CYLINDER PIN	DISCONNECT
	0.3		CYLINDER YOKE PIN	DISCONNECT
	0.2		CYLINDER	R&R
ATG	8.8	21	YOKE PLATE	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	5.3		CENTER HOOP ASSEMBLY	R&R
	0.3		CYLINDER PIN	DISCONNECT
	0.3		CYLINDER YOKE PIN	DISCONNECT
	0.2		CYLINDER	R&R
	0.5		BOLT, M16 X 8	DISCONNECT
	0.3		BOLT, 20MM X 2	DISCONNECT
	0.3		BOLT, YOKE PLATE 5 / 8" X 8	DISCONNECT
	0.6		WRIST JOINT	R&R
ATG	9.6	21	SLEWING RING ASSEMBLY	R&R
	8.8		YOKE PLATE	R&R
	0.3		BOLT, SLEWING RING 5 / 8" X 8	DISCONNECT
	0.3		SLEWING RING ASSEMBLY	R&R
	0.2		GREASE HOSES X 4	DISCONNECT
ATG	3.3	21	HYDRAULIC BLOCK ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.5		HYD. SYSTEM COMPLETE BLEED, FILL, CHECK & ADJUST	CHK. / ADJ.
	0.2		CYLINDER HOSE X 2	DISCONNECT
	0.3		ELECTRICAL HARNESS CONNECTIONS	DISCONNECT

CHANGE	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.1		PRESSURE GAUGE	DISCONNECT
	0.2		BOLT, M8 X 4	DISCONNECT
ATG	2.9	21	ACCUMULATOR ASSEMBLY	R&R
	1		OPEN FLOOR PLATES FOR SERVICE	ACCESS
	1.5		HYDRAULIC SYSTEM, COMPLETE BLEED / FILL / ADJUST	CHK. / ADJ.
	0.1		BLEED SCREW	CHK. / ADJ.
	0.3		ACCUMULATOR ASSEMBLY	R&R
ATG	4.8	21	A T C STAND ALONE ITEMS	
	3		HIGH PRESSURE SWITCH	R&R
	0.3		LOW PRESSURE SWITCH	R&R
	1		POSITION SENSOR	R&R
	0.3		HYD. SYSTEM PRESSURE TEST	TEST

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.5		DASH GAUGE	R&R
	0.5		DASH INDICATOR STRIP	R&R
	0.5		DEFROSTER SWITCH	R&R
	0.3		TURN SIGNAL SWITCH	R&R
	0.2		HORN BUTTON	R&R
	0.5		PARKING BRAKE KNOB	R&R
	0.5		DIMMER SWITCH	R&R
	0.2		DASH FAN	R&R
	1.5		DRIVERS SEAT	R&R
	0.5		INTERIOR SPEAKER	R&R
	1		ACCELERATOR TREADLE (Complete)	R&R
	0.5		DRIVERS SEAT BELT	R&R
	0.4		DRIVERS BOOSTER FAN	R&R
	0.5		DOME LIGHT	R&R
	0.5		THROTTLE POSITION SENSOR	R&R
NF	3.9	20	**WHEELCHAIR RAMP**	
	0.8		HYD.PUMP/RESERVOIR ASSEMBLY	R&R
	0.6		MANIFOLD BLOCK	R&R
	0.2		SKID PLATE	R&R
	0.6		LIFT MECHANISM ASSEMBLY	R&R
	0.5		MICRO SWITCHES/LIMIT SWITCHES	R&R
	1.2		RAMP ASSEMBLY COMPLETE	R&R
	1.5		LIFT MECHANISM ASSEMBLY **(AS A SEPARATE OPERATION)**	R&R
LIFT-U	3.2	20	**WHEELCHAIR LIFT**	
	0.25		HANDPUMP ASSEMBLY	R&R
	0.1		MISC. HYD. HOSE ASSEMBLY	R&R
	0.1		MISC. HYD. FITTING	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	1		HYD. POWER UNIT ASSEMBLY (12 or 24 v)	R&R
	0.15		FILTER HOUSING	R&R
	0.15		PRESSURE RELIEF VALVE	R&R
	0.15		SOLENOID 12V or 24V (HYD. POWER UNIT)	R&R
	0.45		DIRECTIONAL CONTROL VALVE ASSY (12 or 24 V)	R&R
	0.1		COIL ASSY. 12 or 24 V (DIRECTIONAL CONTROL VALVE)	R&R
	0.15		MANUAL ACTUATOR PIN (DIRECTIONAL CONTROL VALVE)	R&R
	0.2		CABLE ASSEMBLY VALVES	R&R
	0.3		J-BOX ASSEMBLY, AUTO OR SEPARATE DEPLOY	R&R
	0.1		COUNTER ASSEMBLY (12 OR 24V)	R&R
LIFT-U	5.75	20	**WHEELCHAIR LIFT PART B: MAIN FRAME ASSEMBLY**	R&R
	2		SLIDE CHANNEL WELDMENT (FWD.)	R&R
	2		SLIDE CHANNEL WELDMENT (REAR)	R&R
	0.45		CROSSMEMBER WELDMENT (R/S)	R&R
	0.45		CROSSMEMBER WELDMENMT (C/S)	R&R
	0.15		FRAME MOUNT WELDMENT	R&R
	0.05		EXTENSION SPRING	R&R
	0.15		STOW LATCH ASSEMBLY	R&R
	0.2		BUNDLE SUPPORT	R&R
	0.15		SWIVEL PLATE	R&R
	0.15		SPLASH SHIELD ASSEMBLY (C/S OR R/S)	R&R
LIFT-U	12.35	20	**WHEELCHAIR LIFT PART C: LIFT PLATFORM ASSEMBLY**	R&R
	1.3		LIFT PLATFORM ASSEMBLY	R&R
	0.15		HOSE/CABLE CLAMP	R&R
	0.05		CLOSEOUT FLAP WELDMENT	R&R
	0.05		CLOSEOUT FLAP CLAMP	R&R
	0.15		STOW GUIDE FWD. OR REAR	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.15		PLATFORM SAFETY WALK	R&R
	0.45		BRIDGE HINGE	R&R
	0.3		HINGE CLAMP BAR, FWD/REAR (LIFT PLATFORM)	R&R
	1		HINGE CLAMP BAR, FWD/REAR (RAMP BARRIER)	R&R
	0.25		SLIDE LINK BEARING	R&R
	0.3		RAMP BARRIER LINKAGE ASSEMBLY	R&R
	0.45		BRIDGE / BARRIER WELDMENT	R&R
	0.15		WHEEL ASSEMBLY	R&R
	1.3		RAMP / BARRIER ASSEMBLY	R&R
	0.3		BRIDGE CYLINDER ASSEMBLY	R&R
	1		RAMP CYLINDER ASSEMBLY	R&R
	0.3		MANIFOLD ASSEMBLY / LINKAGE	R&R
	1		CABLE ASSEMBLY, POWER PLATFORM/ LIFT PLATFORM	R&R
	1		CABLE SHEATH	R&R
	0.45		SENSITIVE EDGE MOUNTING RAIL, FORWARD OR REAR	R&R
	0.3		SENSITIVE EDGE ASSEMBLY, FORWARD OR REAR	R&R
	0.45		SENSITIVE MAT ASSEMBLY, C/S OR R/S	R&R
	0.3		PROXIMITY SWITCH ASSEMBLY	R&R
	0.3		MISC. HYDRAULIC HOSE ASSEMBLY	R&R
	0.2		MISC. HYDRAULIC FITTINGS	R&R
	0.15		HANDRAIL, FORWARD OR REAR	R&R
	0.1		TRAY COVER	R&R
	0.45		STEP TREAD (RAMP BARRIER)	R&R
LIFT-U	31.85	20	**WHEELCHAIR LIFT PART D: POWER PLATFORM ASSEMBLY**	
	4		POWER PLATFORM ASSEMBLY	R&R
	2.15		BEARING BLOCK C/S OR R/S	R&R
	2.45		STOW SHIFT	R&R
	0.1		PLUNGER COVER	R&R

VENDOR	TIME	MANUAL SECTION	COMPONENT / TASK DESCRIPTION	TASK
	0.25		TARGET, STOW LEVEL /FLOOR HT.	R&R
	0.15		LATCH STRIKER	R&R
	0.05		SPLIT COLLAR	R&R
	2.3		TORQUE SHAFT COUPLING	R&R
	0.2		BUMPER STOPS FORWARD OR REAR	R&R
	0.2		STOW LATCH CYLINDER ASSEMBLY	R&R
	0.3		DRIVE MOTOR ASSEMBLY	R&R
	0.15		PRIMARY STOW / DEPLOY CHAIN	R&R
	3		PRIMARY KEYED SPROCKET	R&R
	1.3		SECONDARY STOW / DEPLOY CHAIN, FORWARD OR REAR	R&R
	2		SECONDARY KEYED SPROCKET, FORWARD OR REAR	R&R
	3		RETURN SPRING, FWD. OR REAR, MUST BE REPLACED IN PAIRS	R&R
	1.3		IDLER ASSEMBLY	R&R
	0.45		SLAVE CHAIN ASSEMBLY	R&R
	0.3		LIFT CHAIN ASSEMBLY	R&R
	0.2		CRUTCH ASSEMBLY	R&R
	3		MASTER ARM ASSEMBLY, FORWARD OR REAR	R&R
	0.45		SLAVE ARM ASSEMBLY, FORWARD OR REAR	R&R
	0.1		MISC. HYDRAULIC HOSE ASSEMBLY	R&R
	0.1		MISC. HYDRAULIC FITTINGS	R&R
	1		LIFT CYLINDER, FORWARD OR REAR	R&R
	1.3		CABLE ASSEMBLY, POWER PLATE / BHD.	R&R
	1		CABLE SHEATH, POWER PLATE / BHD.	R&R
	0.3		PROXIMITY SWITCH ASSEMBLY	R&R
	0.3		LIMIT SWITCH ASSEMBLY, CHAIN	R&R
	0.3		LIMIT SWITCH ASSEMBLY, STOW / DEPLOY	R&R
	0.15		LIMIT SWITCH ARM	R&R
HUBNER	8	21	**ARTICULATED JOINT BELLOWS**	

VENDOR	TYPE	LABOR HOURS	COMPONENT / TASK DESCRIPTION	TASK
	1		DOOR SHAFT LEVER ASSEMBLY	R&R
	0.3		DOOR SHAFT & ARM ASSEMBLY	R&R
	0.3		DOOR PANELS (PER PANEL)	R&R
	0.2		PIVOT ASSEMBLY, ENTRANCE DOOR TOP	R&R
	1		ENTRANCE DOOR SHAFT LEVER ASSEMBLY	R&R
	0.5		LEVER ASSEMBLY, ENTRANCE DOOR	R&R
	0.5		SPACER & BALL BEARING	R&R
	2.1		ENTRANCE DOOR SHAFT & ARM ASSEMBLY	R&R
	0.3		DOOR PANELS (PER PANEL)	R&R
	1		DOOR GLASS (UPPER AND LOWER)	R&R
	0.2		PIVOT ASSEMBLY, ENTRANCE DOOR TOP	R&R
	0.3		SEALS AND TRIM, ENTRANCE DOOR	R&R
	0.3		BRUSHES, ENTRANCE DOOR	R&R
	2.6		ENTRANCE DOOR MECHANISM OVERHAUL	R&R
	1.5		DOOR CYLINDER ASSEMBLY	R&R
	0.2		DOOR MAG VALVE	R&R
	0.3		LIMIT SWITCHES	R&R
	0.6		CONNECTING RODS, ENTRANCE DOOR	R&R
VAPORMF		16	EXIT & ENTRANCE DOOR STAND ALONE ITEMS	
	4.6		STEPWELL ASSEMBLY, REAR	R&R
	5.3		STEPWELL ASSEMBLY, FRONT	R&R
	0.5		AIR FILTER, BASEPLATE	R&R
	1		EXIT DOOR ADJUSTMENT (FIT & ALIGNMENT, CHECK & ADJUST)	ADJUSTMENT
	0.3		EXIT DOOR SPEED ADJUSTMENT	ADJUSTMENT
	0.3		EXIT DOOR HALL SENSOR VANE ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR EMERGENCY LINKAGE ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR LSS SENSOR ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR LOCK SOLENOID ADJUSTMENT	ADJUSTMENT

VENDOR	TYPE	LABOR HOURS	COMPONENT / TASK DESCRIPTION	TASK
	0.6		BASE PLATE ASSEMBLY(Welded)	R&R
	0.5		DOOR MOTOR	R&R
	1.5		DOOR MOTOR OVERHAUL	Overhaul
	0.2		ADJUSTING RODS	R&R
	0.5		EMERGENCY RELEASE VALVE (Dump Valve)	R&R
	1.2		DOOR SHAFT & ARM ASSEMBLY	R&R
	0.3		TOUCH TAPE	R&R
	0.1		MICRO SWITCH	R&R
	0.3		SEALS & TRIM	R&R
	0.2		GRAB HANDLE	R&R
	0.5		CHIME	R&R
	0.8		DOOR CONTROLLER	R&R
	0.5		DOOR GLASS	R&R
	1		HALL EFFECT LOCK PAWL SWITCH	R&R
	1		REAR DOOR BEARINGS	R&R
	1		REAR DOOR SOLENOID (MAG VALVE)	R&R
	0.5		ANNUNCIATE PANEL	R&R
	1		SONIC SENSOR	R&R
VAPORMF		16	SWING EXIT DOOR SYSTEMS	
	2.9		SWING EXIT DOORS	
	0.8		EXIT DOOR PANELS (BOTH)	R&R
	2.1		EXIT DOOR ASSEMBLY	R&R
	0.6		ELECTRO-PNEUMATIC EXIT DOOR ENGINE	R&R
	0.6		EXIT DOOR PANELS (BOTH)	R&R
	0.5		DOOR GLASS	R&R
	0.1		DOOR SHAFT LEVERS	R&R
	1.6		EXIT DOOR ASSEMBLY (ONE)	R&R
	0.4		RUBBER BUMPERS	R&R

VENDOR	TYPE	LABOR HOURS	COMPONENT / TASK DESCRIPTION	TASK
	0.2		EXIT DOOR LOCK PRAWL TO CAM CLEARANCE ADJUSTMENT	ADJUSTMENT
	0.2		EXIT DOOR PANEL SENSOR ADJUSTMENT	ADJUSTMENT
	3		EXIT DOOR COMPLETE FUNCTIONAL TEST	ADJUSTMENT
	1		ENTRANCE DOOR ADJUSTMENT FOR FIT, CHECK & ADJUST	ADJUSTMENT
	0.3		ENTRANCE DOOR SPEED ADJUSTMENT	ADJUSTMENT
	3		ENTRANCE DOOR COMPLETE FUNCTIONAL TEST	TEST
	1.2		EXIT DOOR EMERGENCY RELEASE VALVE	TEST
	1		ENTRANCE DOOR EMERGENCY RELEASE VALVE	R&R
	1		DOOR CONTROLLER	R&R
	0.5		DOOR CONTROLLER MODULE	R&R
	0.5		ENUNCIATOR PANEL	R&R
				R&R
ALL		17	SEATING	
	1		DRIVERS SEAT	R&R
	0.5		DRIVERS SEAT BELT	R&R
	0.6		PASSENGER SEAT (Double)	R&R
	0.1		SEAT INSERTS	R&R
	1		WHEELCHAIR FLIP SEAT	R&R
ALL		18	DESTINATION SIGNS	
	1.2		DESTINATION SIGN ASSEMBLY (Front)	R&R
	1		DESTINATION SIGN ASSEMBLY (Side)	R&R
	0.5		REAR ROUTE SIGN	R&R
	0.5		DECODER BOARD	R&R
	0.8		DESTINATION SIGN CONTROL BOARD	R&R
	0.5		PROCESSOR BOARD	R&R
	1		DESTINATION SIGN GLASS (On coach)	R&R
ALL		19	DRIVERS CONTROLS	

VENDOR	TYPE	LABOR HOURS	COMPONENT / TASK DESCRIPTION	TASK
	0.3		SEALS & TRIM	R&R
	0.3		DOOR BRUSHES	R&R
	0.3		HANDLE	R&R
	0.3		TOUCH TAPE	R&R
	3.5		EXIT DOOR BASEPLATE OVERHAUL	OVERHAUL
	1.8		BASE PLATE ASSEMBLY	R&R
	0.2		EXIT DOOR AIR CYLINDER	R&R
	0.2		DOOR SOLENOID & BRACKET ASSEMBLY	R&R
	0.2		HALL EFFECT LOCK PRAWL SWITCH	R&R
	0.1		CAM ASSEMBLY	R&R
	0.2		MICRO / LIMIT SWITCHES	R&R
	0.5		SKINNER VALVE	R&R
	0.1		BASEPLATE BUSHINGS	R&R
	0.2		ELECTRIC SOLENOID	R&R
	0.1		RETURN SPRING	R&R
	0.2		CONNECTING RODS	R&R
	1.4		EXIT DOOR SOLENOID AND BRACKET ASSEMBLY	R&R
	0.2		BRACKET ASSEMBLY	R&R
	0.3		EXTENSION SPRING	R&R
	0.2		LEVER ASSEMBLY	R&R
	0.1		END PLAY SPACER AND BUSHING	R&R
	0.1		CAM ASSEMBLY	R&R
	0.2		EMERGENCY CONNECTING ROD ASSEMBLY	R&R
	0.2		LOCK PRAWL ASSEMBLY	R&R
	0.1		SENSOR ASSEMBLY	R&R
VAPORMF		16	SLIDE GLIDE ENTRANCE DOORS	
	2.4		SLIDE GLIDE ENTRANCE DOOR ASSEMBLY	R&R
	0.6		CONNECTING RODS, ENTRANCE DOOR	R&R

4.8.2 REPAIRS BY CONTRACTOR

If Port Authority requires the Contractor to perform warranty-covered repairs, the Contractor's representative must complete the repairs within three days, or a mutually agreed upon period, from the time the coach is made available for repair by the Authority. For any coach which is in the custody and control of the Contractor for repairs, beyond three (3) business days, or a mutually agreed upon period, the Contractor shall reimburse Port Authority at the rate of $500.00 per day for "loss of use". (This shall include all requests for testing and/or instances above or beyond the control of the Contractor or its supplies.) Port Authority shall make the coach available to complete repairs timely with the Contractor's repair schedule.

Warranty covered repairs may require Port Authority to transport the coach to and from the contractors or contractors designated repair facility. Costs for this transportation shall be recoverable through the warranty claim process.

At Port Authority's option, the Contractor may be required to remove the coach from Port Authority's property while repairs are being effected. If the coach is removed from Port Authority's property, repair procedures must be diligently pursued by the Contractor's Representative and an estimate of the length of time necessary to complete the repairs must be furnished to Port Authority in writing. The Contractor shall provide at its own expense all spare parts, tools, and equipment required to complete repairs.

The Contractor shall supply to Port Authority, in a timely manner, a work order showing the coach number, mileage, date, nature of repair, parts repaired/supplied (including part numbers with current prices and serial numbers), current labor rate, man hours expended, etc. for each coach it repairs. This information shall also be provided if repairs are performed by a subcontractor.

4.8.3 REPAIRS BY PORT AUTHORITY

If Port Authority performs the warranty-covered repairs, it shall correct or repair the defect and any related defects using Contractor-specified spare 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 warranty shall be submitted by Port Authority to the Contractor for reimbursement or replacement of parts. Port Authority may provide the report/claim forms for reimbursement of repairs covered under the warranty provisions.

4.8.3.1 CONTRACTOR-SUPPLIED PARTS

Port Authority may request that the Contractor supply new parts for warranty-covered repairs being performed by Port Authority. These parts shall be delivered prepaid to Port Authority from any source selected by the Contractor within three (3) business days, or a mutually agreed upon period, of receipt of the request for said parts. Port Authority shall be reimbursed at a rate of $300.00 per day for each day beyond the three (3) business days, or mutually agreed upon period, that the part(s) are not delivered to Port Authority for "loss of use".

4.8.3.2 DEFECTIVE COMPONENTS RETURN

The Contractor may request that parts covered by the warranty be returned to the manufacturing plant. The total cost for this action shall be paid by the Contractor. Materials shall be returned in accordance with Contractor's instructions.

4.8.3.3 FAILURE ANALYSIS

The Contractor shall, upon specific request of Port Authority, 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 60 (sixty) days of the receipt of failed parts.

4.8.3.4 REIMBURSEMENT FOR LABOR

Port Authority shall be reimbursed by the Contractor for labor. The amount shall be determined by multiplying the number of man-hours actually required to correct the defect by the current per hour, 5M Mechanic, straight wage rate, plus applicable fringe benefits and overhead costs, plus the cost of towing the coach if such action was necessary and if the coach was in the normal service area. Labor required to correct "Fleet Defects" shall be reimbursed per the above method but with the wage rate multiplied by 1.5.

4.8.3.5 REIMBURSEMENT FOR PARTS

Port Authority shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The Port Authority reserves the right and the discretion to specify the reimbursement method or type; credit, check, parts, etc. The reimbursement shall be at the Contractor's list price cost of the part(s) at the time of repair and shall include taxes where applicable, and 25% of the part costs to cover part handling. If the part(s), when requested as reimbursement, are not available from the Contractor within the time limit *(See Section 4.8.3.1)*, the Port Authority reserves the right to acquire parts and charge the Contractor the invoice price.

4.8.4 WARRANTY AFTER REPLACEMENT/REPAIRS

If any component, unit, or subsystem is repaired, rebuilt or replaced by the Contractor, or by the Port Authority 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 days, in accordance with "Scope of Warranty Repairs" (Section 4.6).

The warranty on items determined to be fleet defects as defined in Section 4.7 shall be extended for the time and/or miles of the original warranty remaining at the time the fleet defect was identified. This extended warranty shall begin on the repair/replacement date for corrected items on each bus.

4.8.5 REIMBURSEMENT TO PORT AUTHORITY

The Contractor shall, in a timely manner, reimburse Port Authority for all claims submitted and approved. Any and all claims submitted by Port Authority shall either be approved or denied within sixty (60) days of their receipt by the Contractor.

Any and all claims not denied by the Contractor shall be paid to Port Authority within sixty (60) days of receipt by the Contractor. All warranty claims unpaid sixty (60) days after the invoice date will be charged one and a half (1½) percent per month until the claim is paid.

Port Authority shall be supplied with written explanation for all denied claims within sixty (60) days of their receipt of said claim by the Contractor or said claim will be paid in full by Contractor.

5 TECHNICAL SPECIFICATIONS

(i) - Referenced on Agreement Page 2 of 6

DIESEL
AND/OR
DIESEL-ELECTRIC HYBRID
POWERED
TRANSIT TYPE COACHES

5.1 SCOPE

This Technical Specification covers the requirements for providing diesel and/or diesel-electric hybrid powered transit coaches which shall be used for general service in the County of Allegheny, and surrounding contiguous counties. It is intended for the widest possible spectrum of passengers, including adults, children, the elderly, and the physically challenged.

5.1.1 DEFINITIONS

The following are definitions of special terms used in the Technical Specification:

(1) *dBa.* Decibels with reference to 0.0002 microbar as measured on the "A_a" scale.

(2) *Audible Discrete Frequency.* An audible discrete frequency is determined to exist if the sound power level in any 1/3 octave bands exceeds the average of the sound power level of the two adjacent 1/3 octave bands by 4 decibels (dB) or more.

(3) *Free Floor Space.* Floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area.

(4) *Curb Weight.* Weight of vehicle, including maximum fuel, oil, and coolant; and all equipment required for operation and required by his Specification, but without passengers or driver.

(5) *Seated Load.* One hundred fifty pounds for every designed passenger seating position and for the driver.

(6) *Gross Load.* One hundred fifty pounds for every designed passenger seating position, for the driver, and for each 1.5 square feet of free floor space.

(7) *SLW (Seated Load Weight).* Curb weight plus seated load.

(8) *GVWR (Gross Vehicle Weight Rated).* Curb weight plus gross load.

(9) *Driver's Eye Range.* The 95th percentile eyellipse defined in SAE Recommended Practice J941, except the height of the eyellipse shall be determined from the seat at its reference height.

(10) *Fireproof.* Materials that will not burn or melt at temperatures less than 2,000°F.

(11) *Fire-Resistant.* Materials that have a flame spread index less than 150 as measured in a radiant panel flame test per ASTM-E 162-75.

(12) *Human Dimensions.* The human dimensions used in the Technical Specification are defined in SAE Recommended Practice J833.

(13) *HIC (Head Injury Criteria).* The following equation presents the definition of head injury criteria:

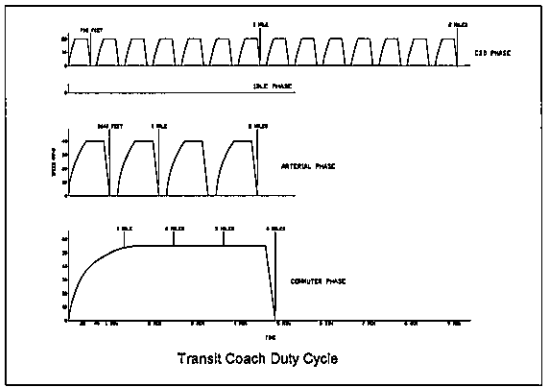
$$\left[\frac{1}{t_1 - t_2}\int_{t_1}^{t_2}(a)\,dt\right]^{2.5}(t_2 - t_1)$$

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

(14) *Design Operating Profile.* The operating profile for design purposes shall consist of simulated transit type service. The duty cycle is described in the chart entitled "Transit Coach Operating Duty Cycle". The duty cycle consists of three phases to be repeated in sequence: a central business district (CBD) phase of 2 miles with 7 stops per mile and a top speed of 20 mph, an arterial route phase of 2 miles with 2 stops per mile and a top speed of 40 mph, and a commuter phase of 4 miles with 1 stop and a maximum speed of 55 mph.

Phase	Stops/ Mile	Top Speed (mph)	Miles	Accel. Dist. (ft.)	Accel. Time (s)	Cruise Dist. (ft.)	Cruise Time (s)	Decel. Rate (fpsps)	Decel. Dist. (ft.)	Decel. Time (s)	Dwell Time (s)	Cycle Time (mins)	Total Stops
CBD	7	20	2	155	10	540	18.3	6.78	40	4.5	7	6-30	14
Idle	-	-	-	-	-	-	-	-	-	-	-	5-0	-
Arterial	2	40	2	1035	20	1350	22.5	6.78	235	9	7	4-30	4
CBD	7	20	2	155	10	510	18.3	6.78	40	4.5	7	6-30	14
Arterial	2	40	2	1035	20	1350	22.5	6.78	235	9	7	4-30	4
CBD	7	20	2	155	10	510	18.3	6.78	40	4.5	7	6-30	14
Commuter	1 stop for phase	34mi. or 55	4	3300	90	2 miles + 4080 ft.	198	6.78	480	12	20	5-10	1
Total			14									47-10	51

Average Speed - 17.8 mph



Transit Coach Duty Cycle

The coach shall be loaded to SLW and shall average approximately 18 mph while operating on this duty cycle. Operation shall continue regardless of the ambient temperature or weather conditions. The passenger doors shall be opened and closed at each stop, and the coach shall be knelt at each stop during the CBD phase. The braking profile shall be:

16 percent of the stops at 3 fpsps
50 percent of the stops at 6 fpsps
6 percent of the stops at 9 fpsps
8 percent of the stops at 12 fpsps

These percentages of stops shall be evenly distributed over the three phases of the duty cycle. For scheduling purposes, the average deceleration rate is assumed.

(15) *Classes of Failures.* Classes of failures are described below.

(a) Class 1: Physical Safety. A failure that could lead directly to passenger or driver injury and represents a severe crash situation.

(b) Class 2: Road Call. A failure resulting in an en route interruption of revenue service. Service is discontinued until the coach is replaced or repaired at the point of failure.

(c) Class 3: Coach Change. A failure that requires removal of the coach from service during its assignments. The coach is operable to a rendezvous point with a replacement coach.

(d) Class 4: Bad Order. A failure that does not degrade coach operation. The failure shall be reported by driver, inspector, or hostler.

(16) *Maintenance Personnel Skill Levels.* Defined below are maintenance personnel skill levels used in the Technical Specification.

5M - Specialist Mechanic or Class A Mechanic Leader
4M - Journeyman or Class A Mechanic
3M - Service Mechanic or Class B Serviceman
2M - Mechanic Helper or Coach Serviceman
1M - Cleaner, Fueler, Oiler, Hostler, or Shifter.

(17) *Standards.* Standards referenced in the Technical Specification are the latest revisions unless otherwise stated.

(18) *Approvals by Port Authority.* In the Technical Specification where the wording appears "Shall be approved by Port Authority, Project Manager, Engineer, Port Authority representative, etc." shall be an item(s) for which a bidder must submit a Request For Approved Equal.

5.1.2 ABBREVIATIONS

The following is a list of abbreviations used in the Technical Specification.

(1)	ADA	Americans with Disabilities Act
(2)	ANSI	American National Standards Institute
(3)	ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
(4)	ASTM	American Society for Testing and Materials
(5)	AWS	American Welding Society
(6)	EPA	Environmental Protection Agency
(7)	FTA	Federal Transit Administration
(8)	FMCSR	Federal Motor Carrier Safety Regulations
(9)	FMVSS	Federal Motor Vehicle Safety Standards
(10)	IEEE	Institute of Electrical and Electronic Engineers
(11)	ISO	International Organization for Standardization
(12)	JIC	Joint Industrial Council
(13)	NHTSA	National Highway Traffic Safety Administration
(14)	OSHA	Occupational Safety and Health Administration
(15)	SAE	Society of Automotive Engineers
(16)	SPI	Society of the Plastics Industry
(17)	UL	Underwriters Laboratories
(18)	USDOT	United States Department of Transportation

5.1.3 LEGAL REQUIREMENTS

The coach shall meet all applicable FMVSS and all applicable FMCSR regulations that are in effect or that will be in effect at the date of delivery.

The Contractor shall comply with all applicable Federal, state, and local regulations. Local regulations are defined as those below the state level. In the event of any conflict between the requirements of this Specification and any applicable legal requirement, then the legal requirement shall prevail.

5.1.4 OVERALL REQUIREMENTS

Bids must conform to this Technical Specification. The product furnished shall be of first class quality and the workmanship shall be of the best obtainable in various trades. The design of the body, chassis, and equipment which the manufacturer proposes to furnish shall be such as to produce a vehicle of substantial and durable construction in all respects. All units or parts not particularly specified shall be manufacturer's standard units. In all cases, material must be furnished as specified, but if the term "Approved Equal" is used, Port Authority must approve any material or equipment substituted for specified material or equipment. Substitutions, with or without approval of Port Authority, do not in any way relieve the successful bidder from conforming to this Technical Specification.

5.1.4.1 DIMENSIONS

5.1.4.1.1 Physical Size

With the exceptions of exterior mirrors, marker and signal lights, flexible portions of the bumpers, fender skirts, and rubrails, exhaust stack and radio antenna, the coach shall have the following overall dimensions;

(1)	Length:	40 feet, 0 inches	(+0, -3 inch)
(2)	Width:	8 feet, 6 inches	(+0, -3 inch)
(3)	Height:	10 feet, 3 inches	(+0, -5 inch)

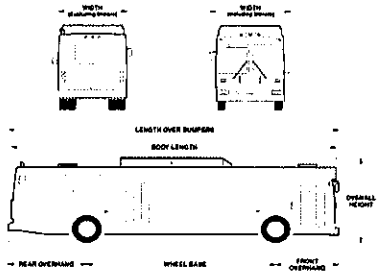


Figure 5.1.5.1.1-A Transit Coach Exterior Dimensions

5.1.4.1.2 Underbody Clearance

The coach shall maintain the minimum clearance dimensions as shown in Figure 5.1.5.1.2-A "Minimum Road Clearance, 35-Foot and 40-Foot Transit Coach" and defined in SAE Standard J689, regardless of load up to the gross vehicle weight rating.

(1) Ramp Clearances.

Approach angle shall be no less than 9 degrees. Departure angle shall be no less than 9 degrees. Breakover angle shall be 8 degrees.

(2) Ground Clearance.

Ground clearance shall be no less than 10 inches except within the axle zone and wheel area.

(3) Axle Clearance.

Axle zone clearance, which is the projected area between tires and wheel on the same axial centerline, shall be no less than 5-1/2 inches.

(4) Wheel Area Clearance.

Wheel area clearance shall be no less than 6-1/2 inches for parts fixed to the coach body and 5 inches for parts that move vertically with the axles.

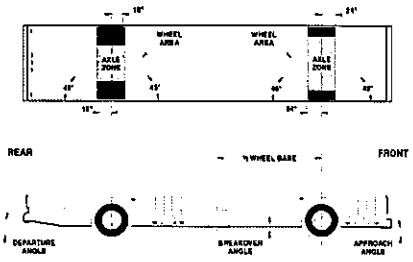


Figure 5.1.5.1.2-A Minimum Road Clearance

5.1.4.2 WEIGHT

5.1.4.2.1 Curb Weight

Curb weight shall not exceed 30,000 pounds. Each coach shall be delivered with a weight certificate showing the curb weight of that vehicle. For each pound in excess of 30,000, $5.00 will be deducted from the invoice for that vehicle.

5.1.4.3 CAPACITY

Rated capacity of the standard configuration coach shall be no less than 39 seated passengers with the standard seating arrangement. See Section 5.2.3.2. SLW and GVWR shall be determined by the seating and standee capacities of the arrangement specified.

5.1.4.4 SERVICE LIFE AND MAINTENANCE

5.1.4.4.1 Service Life

The manufacturer shall become familiar with the environmental conditions (i.e. heavy chemical deicing usage, snow) and terrain (i.e. hills, cobblestone roads, narrow streets) existing in the County of Allegheny and vicinity.
The coach shall be designed to operate in transit service in the County of Allegheny and surrounding contiguous counties for at least 12 years or 600,000 miles. It shall be capable of operating at least 50,000 miles per year, *including* the twelfth year.

5.1.4.4.2 Maintenance and Inspection

Scheduled maintenance or inspection tasks as specified by the Contractor shall require a skill level of 3M or less. Scheduled maintenance tasks shall be related and shall be grouped in maximum mileage intervals. Routine scheduled maintenance actions, such as filter replacement and adjustments, shall not be required at intervals of less than 6,000 miles, except for routine daily service performed during the fueling operations. Higher levels of scheduled maintenance tasks shall occur at even multiples of mileage's for lower level tasks.

Any special tools required to maintain the bus shall be provided in quantities as specified in attachments to Part 5: Technical Specifications.

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 shall provide a manual listing the times required for typical repair and service items on the bus

5.1.4.4.3 Mean Mileage Between Failures

The following are design goals for mean mileage between failures by failure class, provided that all specified preventive maintenance procedures are followed:

(1) Class 1: Physical Safety. Mean mileage shall be greater than 1,000,000 miles.

(2) Class 2: Road Call. Mean mileage shall be greater than 20,000 miles.

(3) Class 3: Coach Change. Mean mileage shall be greater than 16,000 miles.

(4) Class 4: Bad Order. Mean mileage shall be greater than 10,000 miles.

5.1.4.4.4 Mean Time to Repair

Repair time and skill levels required for various repairs to coach components shall not exceed mean time or skill levels typically required by Port Authority to repair 40-foot transit coaches manufactured prior to 2008.

5.1.4.4.5 Accessibility

All systems or components serviced as part of periodic maintenance or whose failure may result in Class 1 or Class 2 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.

Relative accessibility of components, measured in time required to gain access, shall be inversely proportional to frequency of maintenance and repair of the components.

5.1.4.4.6 Interchangeability

Components with identical functions shall be interchangeable. These components shall include passenger window hardware, interior trim, lamps, lamp lenses, and seat assemblies. Components with non-identical functions shall not be, or appear to be, interchangeable. The Authority shall approve interchangeability of components.

5.1.4.4.7 Systems Integration

All electronic and electrical systems shall function properly without degradation from electromagnetic sources and without degrading the electromagnetic environment. All electronic and electrical systems shall not be susceptible to temporary or permanent malfunctions when subjected to electromagnetic sources, either of a transient or steady-state nature. Electromagnetic interference's arising from sources such as transmitters or other equipment located either on-board, or adjacent to the coach, or from component parts of the coach ignition or electrical power supply systems, shall not degrade the operating life expectancy of on-board electronic equipment.

5.1.4.5 OPERATING ENVIRONMENT

The coach shall achieve normal operation in the environmental conditions normally occurring in Port Authority's service area in temperature ranges of -25°F to 115°F, at relative humidities between 5 per cent and 100 per cent, and at altitudes up to 2,000 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 2,000 feet. Special equipment or procedures may be employed to start the coach after a 12 hour or more exposure to temperatures below 0°F without the engine in operation. The special equipment or procedures must be approved by the engine manufacturer. Speed, gradeability, and acceleration performance requirements shall be met at or corrected to 70°F, 29.00 inches Hg. dry air. Performance degradation at conditions other than the test standard shall not exceed 1 per cent for each 3°F and 4 per cent for each 1,000 feet of altitude above the standard. The interior climate control system shall perform in accordance with Section 5.3.7.1.

5.2 BODY

5.2.1 SHELL

5.2.1.1 GENERAL

5.2.1.1.1 Design

The coach shall have a clean, smooth, simple design, primarily derived from coach performance requirements and passenger service criteria established by the Technical Specifications. The exterior and body features, including grilles and louvers, shall be shaped to allow complete and easy cleaning by bus washers without snagging brushes. Water and dirt shall not be retained in or on any body feature to freeze or bleed onto the coach after leaving the washer. Body and windows shall be designed 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 coach. Accumulation on any window of the coach of spray and splash generated by the coach's wheels on a set road shall be minimized. All components of the engine compartment shall be designed to resist penetration by high pressure, hot water-detergent solution used to periodically degrease the engine.

5.2.1.1.2 Materials

Body materials shall be selected and the body fabricated to minimize maintenance, prevent corrosion, extend durability, and provide consistency of appearance throughout the life of the coach. Detailing shall be kept simple; add-on devices and trim shall be minimized and, where necessary, integrated into the basic design. Particular attention shall be given to the material selection and assembly of dissimilar materials to preclude the occurrence of galvanic corrosion.

5.2.1.1.3 Finish and Color

All exterior surfaces shall be smooth and free of visible fasteners, wrinkles, and dents, as approved solely by Port Authority. 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. Chemicals used to clean body surfaces prior to paint application shall be compatible with the surface to be painted, causing no deterioration. Body putty, filler, or epoxy shall not be used to repair exterior blemishes or damage. Damaged or wrinkled body panels shall be replaced prior to application of primer. Paint shall be applied smoothly and evenly with the finished surface free of dirt, runs, orange peel, and other imperfections. All exterior finished surfaces shall be impervious to diesel fuel, gasoline, and commercial cleaning agents. Finished surfaces shall not be damaged by direct application advertising or controlled applications of commonly used graffiti-removing chemicals. The vehicle is to be painted using Imron® Elite polyurethane Basecoat/Clearcoat system consisting of primer, Elite BC and Elite 8840S Clearcoat in the following colors:

Baffin Blue	Dupont L4033-HL
Blue	Dupont L0438-HL
Green	Dupont L0447-HL
Bahama Yellow	Dupont L0489-HL
Flame Red	Dupont L8554-HL

Final exterior colors may differ from the examples above and will be determined during the Design Review. Each bus shall be a single color. All system additives such as hardeners, reducers, retarders and thinners shall be approved by the paint manufacturer.

Dry film thickness shall be in accordance with the paint manufacturer's recommendations. DFT measurement shall not include the thickness of the galvanized coating of exterior skin, should galvanized sheet metal be used for sidewall construction. Color approval shall be obtained from Port Authority prior to production. Manufacturer shall certify that all body preparation chemicals and primers are compatible with the top coat system being utilized. Manufacturer shall also provide documentation from the paint supplier that all paint/prep operations are in accordance with the paint system manufacturer's recommendations. Paint manufacturer and type must be submitted for approval by Port Authority. Manufacturer shall prepare three sets of painted panels to be used for approval and shall maintain one set of these panels at the manufacturing facility for the purpose of acceptance comparison. The samples shall be approximately 36 in square and painted using the identical procedures to be used on buses for this contract. The lower 1/3 of the panel is to have a damaged section that has been repaired.

5.2.1.1.4 Numbering and Signing

Port Authority will provide the successful bidder a sample set of interior and identification decals, monograms, numbers, and other special signing used by Port Authority to be installed on the vehicle. The manufacturer shall be responsible for decal application in accordance with the attached drawings.

Exterior decals to be applied will be as shown in Figure 5.2.1.1.4 Exterior decals are to be applied in accordance with the vinyl manufacturer's recommended application practices. Final exterior decals may differ from the example and will be determined during the Design Review

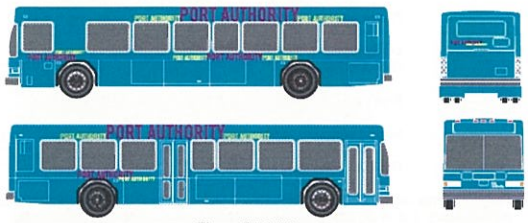


Figure 5.2.1.1.4

The successful bidder shall submit an artist's rendition of the coach color scheme and decal/logo layout within 60 days of award for approval by Port Authority. Final color scheme and decal layout shall be approved by Port Authority prior to construction of the first coach. Numbering and signing shall be in accordance with Port Authority standard layouts. All decals, monograms, numbers, and other signing shall be furnished by the manufacturer. Signs shall be durable, fade, chip and peel-resistant decals of "Scotchlite" reflective material.

Wording in the engine, underfloor, interior passenger and driver compartments shall be stamped in aluminum plates. They shall be colored appropriately to be complementary to the adjacent
surface. Exception to this requirement will be for decals placed on glass surfaces and decals as supplied by Port Authority. All decals and aluminum plates shall be approved by Port Authority Engineer as to design and location.

5.2.1.1.5 Pedestrian Safety

Exterior protrusions greater than ½ inch and within 80 inches of the ground shall have a radius no less than the amount of protrusion. The outside 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 coach shall be designed to minimize the ability of unauthorized riders to secure toeholds or handholds.

5.2.1.1.6 Passenger Windows

A minimum of 10,000 square inches of window area, including door windows, shall be required on each side of the standard configuration coach. Section 5.2.4.2 describes the specific requirements for passenger windows.

5.2.1.1.7 Passenger Doors

Two doors shall be provided on the right side of the coach for passenger ingress and egress. The front door shall be forward of the front wheels and located so that the driver is able to collect or monitor the collection of fares. The rear door centerline shall be rearward of the point midway between the front door centerline and the rearmost seat back. Specific requirements for doors are in Section 5.2.1.8. Requirements for operation of doors are in Section 5.2.2.1.

5.2.1.1.8 Advertising

Provisions shall be made to integrate advertising onto the exterior design of the coach. Advertising provisions shall not cause pedestrian hazards or foul automatic bus washing equipment, and shall not cover or interfere with doors, air passages, vehicle fittings, or in any other manner restrict the operation or serviceability of the coach. A smooth surface shall be provided on each side and the rear of the vehicle for attachment of adhesive-type advertisement signs. The areas on the sides should measure 30 x 144 inches. If there is insufficient space on the curb side, a 30 x 108-inch free space shall then be provided. The manufacturer shall provide a smooth surface on the rear of the bus for mounting the largest standard size adhesive-type sign commercially available on the rear of the coach. Final approval for sign mounting areas will be given during the engineering design review meetings.

5.2.1.2 STRUCTURE

5.2.1.2.1 Structural Analysis

Results of a structural analysis shall be readily available for Port Authority's review to insure that the coach is structurally sound. Structural failures based on design and stress cracks in body skin or frame members shall not occur over the 12-year service life of the coach.

5.2.1.2.2 Strength and Fatigue Life

Coaches of the Port Authority will be operated throughout the entire service area of Allegheny County and surrounding contiguous counties. They shall operate under conditions encountered in transit service in Port Authority service areas throughout the expected twelve-(12) year service life of the coach. The coach design shall incorporate all severe service, heavy-duty features which shall enable the basic structure to withstand fatigue damage that is sufficient to cause Class 5 major failure. The structure shall also withstand sustained impact loads up to 16,000 psi due to street travel in Port Authority's service area throughout the expected twelve-(12) year service life of the coach without permanent deformation, damage or failure of the structure. The structure is considered to be frame, support braces, spines, bulkheads, and outer coach shell.

5.2.1.2.3 Distortion

The coach, at GVWR and under status conditions, shall not exhibit deformation or deflection that impairs operation of doors, windows, or other mechanical elements. Static conditions 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.

5.2.1.2.4 Resonance

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

5.2.1.2.5 Material

Specific designations of metal utilized in the bus structure must be submitted. Reinforced fiberglass and plastic materials shall not be used for stress-carrying body construction members, except for replaceable panels or doors. Fiberglass may be used for front and rear end caps, provided they do not carry any loads or stress. Fiberglass utilized for body caps, access doors, panels or covers shall be reinforced properly to provide adequate strength. This may include, metal support pieces imbedded in the fiberglass. Design, reinforcement and installation must have the approval of Port Authority. Structural material and body skin for the entire coach shall be stainless steel type 304 or Approved Equal.

5.2.1.2.6 Fasteners

5.2.1.2.6.1 General

The Contractor shall procure and deliver fasteners made in the United States for use in the coach manufacturing process. The steel shall be of high quality and for use in general and critical applications. At a minimum, Grade 5 bolts shall be used in all areas where 1/4-inch or larger bolts are required. Grade 8 bolts, nuts, flat and lock washers shall be used as recommended by SAE for critical applications such as: steering, brakes, suspension, etc. The bus manufacturer shall make available a list of locations where Grade 8 bolts are used. All items covered by this specification shall conform to applicable S.A.E., U.S.S., or Metric standards and shall be of U.S. manufacture. No counterfeit fasteners will be permitted.

Should the Port Authority find the Contractor or its suppliers providing counterfeit fasteners of any type, the Contractor may be declared in default and the contract may be terminated or be required to replace all fasteners at its expense.

5.2.1.2.6.2 Testing Options

The Port Authority has the option of random testing of all fasteners prior to coach assembly. This testing may be done by Port Authority at any time during the terms of the contract. A variety of at least 10 fasteners will be collected from various stations in the assembly line by a Port Authority employee. These fasteners will be randomly taken from the stock to be used in the manufacturing of this procurement. These fasteners will be mechanically analyzed by an independent testing laboratory to determine continued compliance with the applicable standards. Additional sample tests may be taken if there is a variance from the Specification.

Cost for testing will be paid for by the Contractor if the samples fail. The Port Authority will accept the cost for testing all samples which are found to be compliant. In order to comply with Federal Regulations, all shipments must be fully traceable for lab testing, heat treatment, and steel requirements. A code shall be assigned and marked on each package which will trace the purchase order. Certifications and testing conducted should be germane to specific products ordered.

The Contractor shall, upon request by Port Authority, produce the manufacturer's test, traceability requirements, and certifications for the following:

a) Process and lay-out inspection
b) Heat treat lot number
c) Plating thickness
d) Plating baking per Federal Specification Q-Z-325
e) Gauging of threads
f) Material chemistry
g) Tensile strength, wedge angle
h) Surface/core hardness
i) Proof load (nuts).

5.2.1.2.7 Corrosion Protection

5.2.1.2.7.1 General Design

The coach shall be designed to resist corrosion from atmospheric conditions and road deicing chemicals. Materials exposed to the atmosphere and all joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. No two dissimilar metals shall be in contact without a non-metallic material used to prevent galvanic corrosion between the two metals. Proper protective measures, drainage and ventilation shall be provided in areas where road debris and water can accumulate. Bidders shall submit a corrosion protection plan for review by Port Authority.

This will further clarify the requirements for this submittal. This submittal shall contain, as a minimum, the following information:

a. Structural Frame

Material Grade, strength, type of material (e.g. tube, structural shapes)

Pretreatment (e.g. pickling, phosphating, abrasive cleaning, coating)

Post treatment, coating, undercoating, interior treatment, etc.

Extent of treatment (e.g. underbody frame, sidewall construction, roof frame)

Caulking -- list locations and type of caulking used

b. Body Construction

Gauge, type of material, protective coating (e.g. galvanized, 1-side, 2-side, coating weight) mill pretreatment, special flatness requirements, etc.

Prepainting or coating treatment

Coating, primer, sandable primer, finish coating, clear coating, etc.. Curing technique used

Roof coating

Interior protection used

Floor construction

For all materials used in the various protective systems, list the manufacturers' names and product names, and all dry film thickness' after they have been applied (not including galvanizing, if applicable).

List precautionary requirements if a potential health hazard might be encountered in the event that the material is cut using flame cutting or sawing to repair possible accident damage.

MSDS sheets must be provided and approved by Port Authority for materials used for corrosion control and coatings.

If special tests have been performed to evaluate corrosion resistance, submit test results.

The above information should be submitted by the date set for Proposal Submittals.

5.2.1.2.7.2 Corrosion Protection Plan

All bidders shall submit a plan of their approach for meeting the conditions of corrosion control by the date set for proposal submittals. Included therein should be a description for handling the cut ends of side sheets, rolled sections that can collect road debris, framing configurations that can retain road debris, wheel housings where dissimilar metals might be used, internal and external protection of open and closed hollow tubular framing members, design and installation of gusset members, method for fastening rain gutters, and method for maintaining control of proper proportioning during mixing of two-component primer and top coat painting systems in accordance with paint manufacturer's application instructions.

5.2.1.2.7.3 Fasteners

Rivets and bolts shall be of the same chemical composition or be electrochemically more noble than the parts they join. Fasteners shall be used in such a manner as to prevent water or moisture from entering the interior of tubular members, the interior of the coach, or any concealed areas between the exterior skin and the interior panels.

5.2.1.2.7.4 Protective Treatment

The surfaces of all structural frame members shall be treated with a coating designed to prevent corrosion. In order to allow for proper adhesion of the undercoating primer, the frame must be sandblasted or acid washed. The protective coating shall be PPG Coroshield and shall meet or exceed military specification MIL-C-83933 and shall remain functional throughout the service life of the coach. All metal surface preparations as recommended by the manufacturer of Coroshield shall be precisely followed. The composition of the materials selected for the protective treatment system shall be such that treated members may be readily cut or removed using conventional cutting methods such as burning or sawing without creating any fumes or substances hazardous to employees. Closed tube frame members up to the roof-line shall be internally and externally treated for corrosion prevention. This method shall be approved by Port Authority. Areas where structural tubing and exterior sheet metal meet shall be sealed to prevent the collection of moisture and debris.

5.2.1.2.8 Towing

Two towing devices shall be provided on each end of the coach. Coaches must have the capability of being towed by a wheel lift type tow apparatus or the standard load equalizing sling type tow equipment. The towing devices when used with a load equalizing sling shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the coach within 20° of the longitudinal axis of the coach. The rear towing device(s) shall not provide a toehold for unauthorized riders. The towing devices shall allow the use of a rigid tow bar and shall permit lifting of the coach, at curb weight, by the towing devices and/or tow bar until the front wheels are clear of the ground. The method of attaching the tow bar shall require the specific approval of Port

Authority. Each towing device shall accommodate a crane hook with a 1.5-inch throat. All coaches shall be designed and constructed in such a way as to be able to withstand being craned, towed or recovered (wheels off the ground) from the front or rear without any frame, structural, or body deformation.

For additional towing provisions see sections 5.3.5.1.4 and 5.3.6.6.7.

5.2.1.2.9 Jacking

It shall be possible to safely jack up the coach, at curb weight, with a common 10-inch high hand jack or a 10-ton floor jack, at the discretion of Port Authority, when a tire or dual set is completely flat and the coach is on a level, hard surface, without crawling under any portion of the coach. This shall be accomplished by providing two lifting pads under the front bumper and incorporated into the full width skid plate. Jacking from a single point shall permit raising the coach 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 2M Serviceman in less than 30 minutes from the time the coach is approached. The coach shall withstand such jacking at any one jacking pad or any combination of wheel locations without permanent deformation or damage.

5.2.1.2.10 Hoisting

The coach axles or jacking plates shall accommodate the lifting pads of a 2-post hoist system. Jacking plates, if used as hoisting pads, shall be approximately 5 inches square, with a turned-down flange not less than 1 inch deep on each side to prevent the coach from falling off the hoist. Other pads or the coach structure shall support the coach on jack stands independent of the hoist. Coaches must be capable of being safely lifted by existing Port Authority hoist equipment. This must be verified at the time the pre production bus is delivered.

Sixty (60) sets (2 per set) of hoist cleats are required and shall be supplied by the coach manufacturer for Port Authority's five (5) operating garages and main shop. The cleat configuration shall mate to the recommended lift point on the coach. The cleats shall fit Rotary hoist in use at Port Authority. The value of the two different style cleats is essentially the same. The exact number of each will be determined given to the successful bidder after award of the contract. Hoist cleats shall be delivered prior to the first production coach.

5.2.1.2.11 Fire Protection

The passenger compartment shall be separated from the engine compartment by a solid metal bulkhead(s) which, by incorporation of fire-proof materials in its construction, be a firewall. This firewall shall preclude or retard propagation of an engine compartment fire into the passenger compartment. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed. Any passageways for the climate control system air circulation, 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. The conduit and bulkhead connectors shall be sealed with fireproof material at 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 engine compartment shall comply with FMVSS and FMCSR.

5.2.1.2.12 Crashworthiness

Crashworthiness shall be determined by actual crash test. Bidders shall supply certified results from crash tests performed on vehicles virtually identical to those proposed for this contract. An Engineer's estimate or computer simulation will not be acceptable. Test results shall be submitted in the envelope marked "Submissions".

The coach 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.

The coach shall withstand a 25 mph impact by a 4,000 pound, post-1973, American automobile at any point, excluding doorways, along either side of the coach with no more than 3 inches of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the coach interior.

Exterior panels below the rubrail and their supporting structural members shall withstand a static load of 2,000 pounds applied perpendicular to the coach anywhere below the rubrail 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 coach.

5.2.1.3 EXTERIOR AND APPLIED PANELS

Only exterior panels that are above the rubrail may be structural components. Exterior surface panels shall not be installed or retained with visible rivets or fasteners. Lower edges of the skirt panels shall be designed to prevent the accumulation of road debris. The lower edge shall be protected with a non-metallic filler or the panel shall be crimped closed depending upon the manufacturer's need for the rolled edge. Exterior panels for the entire coach shall be stainless steel type 304 or Approved Equal.

5.2.1.3.1 Repair and Replacement

Exterior panels below the rub-rail shall be divided into sections that are repairable or replaceable by a 3M Mechanic in less than 30 minutes for a section up to 5 feet long (excludes painting).

5.2.1.3.2 Rain Gutters

Gutters shall be provided to prevent the flow of water from the roof onto the side windows and passenger doors. When the coach is decelerated, the gutters shall not drain onto the windshield, or driver's side window, or into the door boarding area. Cross sections of the gutters shall be no less than ½" wide by ½" high internal dimensions. The gutters shall be placed on top of a flexible membrane to effect a watertight seal and eliminate the need to use caulking around the fasteners.

5.2.1.3.3 License Plates

Provisions shall be made to mount a standard size U.S. license plate on rear of the coach only. These provisions shall flush mount or 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 on or to the left of the coach center and shall not allow a toehold or handhold for unauthorized riders.

5.2.1.3.4 Rubrails

Rub-rails composed of flexible, resilient material shall be provided to protect both sides of the coach body from damage caused by minor sideswipe accidents with automobiles. Rubrails shall have vertical dimensions of no less than 2-½ inches with the centerline no higher than 33 inches above the ground. The rubrails shall be capable of withstanding impacts of 200 foot-pounds of energy from a steel-faced spherical missile no less than 9-inches in diameter and of a 500-pound load applied anywhere along their length by a rigid plate 1 foot in length, wider than the rubrail and with ½-inch end radii with no visible damage to the rubrail, retainer, or supporting structure. The rubrail may be discontinued at doorways. A damaged portion of the rubrail shall be replaceable without requiring removal or replacement of the entire rubrail.

5.2.1.4 INTERIOR

5.2.1.4.1 Headroom

Headroom above the aisle and at the centerline of the aisle seats shall be no less than 78 inches. At the centerline of the window seats, headroom shall be no lower than the required top of the side window. Headroom at the back of the rear bench seat may be reduced to a minimum of 56 inches, but it shall increase to the normal ceiling height at the front of the seat cushion. In any area of the coach directly over the head of a seated passenger and positioned where a passenger entering or leaving the seat is prone to strike his/her head, padding shall be provided on the overhead paneling.

5.2.1.4.2 Driver's Barrier

A barrier or bulkhead between the driver and the left front passenger seat shall be provided. The barrier shall eliminate glare and reflections in the windshield directly in front of the barrier from interior lighting during night operation. The barrier shall be made of a polycarbonate (dark tint) upper portion and a melamine (color(s) to match other interior melamine panels) lower portion. The driver's barrier shall extend from below the level of the passenger or driver's seat cushion, whichever is lower, to within 1 inch of the ceiling and shall fit the coach side windows. The configuration of the barrier shall prevent passengers from reaching the driver or driver's personal effects.

5.2.1.4.3 Modesty Panels

Sturdy divider panels constructed of melamine material shall be provided at the rear of both doorway areas and the front of the rear doorway area. Colors will be given to the successful bidder during the Engineering Design Review Meetings. Supporting structures for the melamine panel shall be constructed of durable, unpainted, corrosion-resistant material. These dividers shall be mounted on the side wall and shall project toward the aisle no further 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 to within 1 ¼ ± ¼ inches of 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 2¼-inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Upper portion of dividers shall be clear ½-inch thick Lexan and extend to within 5 inches of the ceiling. The entire divider can be constructed from melamine with the Lexan inserted in a rubber frame. The modesty panel and its mounting shall withstand normal kicking, pushing, and pulling loads of 200-pound passengers without permanent visible deformation.

5.2.1.4.4 Rear Bulkhead

The rear bulkhead paneling shall be covered with vandal proof upholstered material Holdsworth #BCDJ 25847 or Approved Equal, and shall be fitted to the ceiling, side walls, and seat backs so that any litter, such as cigarette packages or newspapers, will tend to fall to the floor or seating surface when the coach is on a level surface. Any air vents in this area shall be louvered to reduce air flow noise and to reduce the probability of trash or litter being thrown or drawn through the grille. The panel(s), or sections thereof, shall be openable and hinged with ¼ turn tamperproof fasteners to enable quick and easy access to service components located on the rear bulkhead.

5.2.1.4.5 Construction

Interior panels may be integral with, or applied to, the basic coach structure. They shall be approved by Port Authority. Use of moldings and small pieces of trim shall be minimized, and all parts shall be functional.

5.2.1.4.6 Fastening

Interior panels shall be attached so that there are no exposed edges or rough surfaces. Panels and fasteners shall not be easily removable by passengers.

Interior trim fasteners, where required, shall be rivets or crosshead recessed head screws.

5.2.1.5 FLOOR

5.2.1.5.1 Height

Height of the floor above the street shall be no more than 15 ½ inches measured at the centerline of the front and rear doorway. The floor may be inclined along the longitudinal axis of the bus, and the incline shall be less than 3 1/2° off the horizontal except locally at the doors where 2° slope toward the door is allowed. All floor measurements shall be with the bus at the design running height and on a level surface and with the standard tires

5.2.1.5.2 Strength

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 and Step Treads, 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.

5.2.1.5.3 Design

The floor shall be essentially a continuous flat plane, except at the stepwells and wheel housings.
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.

5.2.1.5.4 Floor Protection

The floor, as assembled, including the sealer, attachments, and covering, shall be waterproof, nonhygroscopic, resistant to wet and dry rot, resistant to mold growth, and impervious to insects. Plywood, if used, shall be no less than ¾-inch thick American Plywood Association, marine grade, 7-ply, finished on both sides, and shall be installed with all edges sealed.

5.2.1.6 STEPS AND STEPWELLS

5.2.1.6.1 Steps

The edge of the vestibule floor and the end of the step tread shall have a bright contrasting white band no less than 2 inches wide on the full width of the step. The color shall be permanently blended into the tread covering material.

A maximum of two steps will be permitted in order to access the higher rear floor portion of the bus. These shall be centered transversely in the vehicle. The steps shall be illuminated with lights mounted in the riser sides. The lights shall contain shields to prevent glare in the coach windshield.

5.2.1.6.2 Stepwell Structure

Stepwells including supporting structural members shall be corrosion-resistant throughout the life of the coach. Stepwells shall be replaceable as units if they are constructed of non-metallic material. The steps shall simultaneously support 300-pound loads evenly distributed over the center half of each step tread without permanent deformation and with elastic deflection of no more than 0.125 inches. Each step tread shall support a load of 500 pounds evenly distributed over the center half of the tread without permanent deformation. The steps shall be sloped only sufficiently to preclude water accumulation in the stepwells. All corners in stepwells, which are fiberglass, shall have radii no less than ½ inch.

5.2.1.7 WHEEL HOUSING

5.2.1.7.1 Construction

Wheel housings shall enclose the space occupied by the rear and front wheels, respectively. The housing panels shall be constructed of no less than 12 gauge (0.109 inches) thick stainless steel. The wheel housing panels shall serve as a protective shield to prevent road debris from accumulating on underbody frame members. They shall protect the entire width of the wheel house, from the bottom of the skirt at the rear of the wheel opening, and over the tire to the floor line of the coach. The rear wheel housings shall be designed so that debris cannot catch on any edges or bolt heads. The rear wheel housing shall be capable of withstanding all types of normal abuse due to wheel pickups thrown against the underside. Wheel housing panels shall be securely mounted to the coach body and sealed to prevent the ingress of road debris. To prevent galvanic corrosion, the stainless steel panels shall be isolated from the coach body by a non-metallic strip. The wheel housing shall contain smooth flat surfaces that form a half-round type structure. The sides shall extend down far enough to protect frame members from road debris.

Wheel housings as installed and trimmed shall withstand impacts of a two-(2") inch steel ball at least two hundred (200) foot-pounds of energy without penetration.

Interference between the tires and any portion of the coach shall not be possible in maneuvers up to the limit of tire adhesion with weights from wet to GVWR. The front wheel housing, likewise, shall be provided with shielding to prevent accumulations of road debris.

The front wheelhousings shall have fiberglass covers installed over the stainless steel. These shall be gel-coated in a black matte finish to reduce glare. The rear wheelhousings shall be covered with 1/4 inch floor rubber (color to match flooring under seats) attached with the proper adhesive. Seams on the wheelhouse and at the floor line shall be "welded" according to the floor covering manufacturer's instructions. The final configuration and esthetic appearance of the wheelhousings shall have the approval of Port Authority.

5.2.1.7.2 Clearance

Sufficient clearance and air circulation shall be provided around the tires, wheels, and brakes to preclude overheating when the coach is operating on the design operating profile. Tire
clearance shall be provided on all driven wheels in accordance with SAE Information Report J683.

5.2.1.7.3 Fender Skirts

Features to minimize water spray from the coach in wet conditions shall be included in wheel housing design. Fender skirts shall be unbreakable and easily replaceable. They shall be flexible if they extend beyond the allowable body width. Steps shall be taken in handling the cut edge of the fender section during fabrication so as to leave intact the zinc coating which will serve as a prime coat base for the protective coating system. Wheels and tires shall be removable when hoisted by the axle without disturbing the fender skirts.

5.2.1.7.4 Splash Aprons

Splash aprons shall be composed of a minimum of ¼-inch fabric-reinforced belt material. Floor covering material will not be acceptable. They shall be installed behind each wheel or wheel set and shall extend downward to within 3 inches of the road surface. Splash aprons shall extend to the outer edges of the tires to prevent road debris from being thrown onto the side of the coach. Both front and rear axles shall have overlapping center splash aprons which shall extend across the entire width of the coach, and shall be bolted to the coach understructure. The splash aprons shall be fastened against a stiff, non-metallic strip with sufficient fasteners to effect a tight seal against the wheelhouse to prevent damp roadway debris from entering the joint and attacking the steel. Splash aprons and their attachments shall not be included in the road clearance measurements. Other splash aprons shall be installed where necessary to protect coach equipment.

5.2.1.8 PASSENGER DOORS

5.2.1.8.1 General

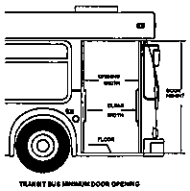
Two doorways shall be provided in the curbside of the bus for passenger ingress and egress. The front doorway shall be forward of the front wheels and located so that the operator will be able to collect or monitor the collection of fares. Passenger doors and doorways shall comply with ADA requirements.

5.2.1.8.2 Materials

Structure of the doors, their attachments, inside and outside trim panels, and any mechanism exposed to the elements shall be durable and corrosion-resistant. Door construction shall be of Aluminum. The doors, when fully opened, shall have a handrail to support and shall not be damaged when as an assist by passengers during ingress and egress.

5.2.1.8.3 **Dimensions**

When open, the doors shall leave an opening no less than 81 inches in height. Front and rear door opening width shall be no less than 30 inches with the doors fully opened. Door opening widths may be reduced 3 inches on the sides of the extreme top and extreme bottom of each door opening. This 3-inch projection shall be reduced to 30 inches within 26 inches of the bottom and within 18 inches of the top. Allowable projection into the door opening is shown in Figure 5.2.1.8.2-A "Transit Coach Minimum Door Opening". Projections shall not form a hazard to passengers. The clear width door opening, including door-mounted passenger assists shall be no less than 24 inches for the front and rear doors.



TRANSIT BUS MINIMUM DOOR OPENING

5.2.1.8.4 **Door Glazing**

The upper section (½ door height) of both front and rear doors shall be glazed for no less than 45 per cent of the respective door opening area of each section. Glazing shall be easily replaceable by removing zip-locks from the door glass rubber moldings. The lower section of both the front and rear doors shall be glazed for no less than 25 percent of the door opening area of each section. The edge of a 6-inch high curb shall be visible to the seated driver through the closed front door when the coach is more than 12 inches from the curb.

5.2.1.8.5 **Door Projection**

Exterior projection of the doors shall be minimized and shall not exceed 13 inches during the opening or closing cycles or when doors are fully opened. Projection inside the coach shall not exceed 20 inches. The closing edge of each door panel shall have no less than 2 inches of soft weather stripping. The doors, when closed, shall be effectively sealed, and the hard surfaces of the doors shall be at least 4 inches apart.

5.2.1.8.6 **Door Heights Above Pavement**

It shall be possible to open and close either passenger door when the coach, loaded to GVWR, is not kneeled and parked with the tires touching an 8-inch high curb on a street sloping toward the curb so that the left side wheels are 5 inches higher than the right side wheels.

5.2.1.8.7 **Door Type**

Front and rear passenger doors shall be manufactured by U. S. Vapor and shall be the "Slide-Glide" type. If brushes are used to seal the door, a rubber strip shall be added to the outside to preclude water and dirt from entering. Door configuration must be approved by Port Authority.

5.2.1.9 **SERVICE COMPARTMENTS AND ACCESS DOORS**

5.2.1.9.1 **Interior**

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Removal of fixtures or unrelated equipment shall not be necessary to gain access to the component or item to be repaired. Access doors shall be hinged on the top or forward edge with props, as necessary, to hold the doors out of the mechanic's way.

Retention of all interior access panels, except on the door actuator compartments, shall be standardized so that only one tool is required to service all special fasteners within the coach. Access doors for the passenger door actuator compartments shall be secured with hand latches, and shall be sealed to prevent entry of mechanism lubricant into the coach interior. All fasteners that retain access panels shall be captive in the cover. Fasteners for all removable panels shall be ¼ turn quick release type.

Hartwell latches shall be utilized in all locations where a thumb or hand latch (requiring no tools) is supplied.

Any access openings in the floor shall be sealed to prevent entry of fumes, water and dirt into the coach interior. Flooring material shall be flush with the floor and shall be edge-bound with stainless steel trim to prevent the edges from coming loose. Access openings shall be non-symmetrical so that reinstalled flooring shall be properly aligned. Large hatches (over 500 square inches) shall be secured with an over-center spring mechanism. Close by applying foot pressure downward. Open by inserting a tool in an edge opening and prying upward. Fasteners (if used) shall tighten flush with the floor. The following interior access doors, if used, shall have decals on the exterior of the door: Fire Extinguisher, Flares, and Door Master Switch. To facilitate replacement of engine components, an access opening shall be provided under the center rear cross-seat. The opening shall extend from the floor to the rear bulkhead. If the coach structure will not permit this large opening then two access openings shall be provided: one under the center rear transverse seat bottom and one in the center of the rear transverse seat riser. Small, infrequently used hatches, i.e. fuel tank access, etc., may be secured with corrosion-resistant fasteners. Port Authority shall give final approval of all floor hatches.

5.2.1.9.2 **Exterior**

Conventional lightweight hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments, including doors for checking quantity and adding engine coolant and windshield washer solvent. Access to these compartments shall be from outside the coach. 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 be capable of withstanding severe abuse throughout the life of the coach. 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 coach washing operations. All access doors shall be retained in the open and closed position with over-center gas-filled cylinders or springs. All large (greater than 150 square inches) access doors shall be retained in the open position by a positive locking device. Springs, hinges and attaching hardware shall be stainless steel or rubber and shall last for the coach's service life. Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for the opening. Large access doors shall hinge up and out of the way or fold flat against the coach body and shall be easily opened by one person. These doors, when opened, shall not restrict access for servicing other components or systems. Major access doors shall be equipped with locks requiring a nominal 5/16-inch, square-end tool to open. Locks on sealed compartments (such as electrical panels, etc.) accessed from the outside of the coach shall sealed to prevent water from entering through the square-key opening in the lock. One (1) lock key shall be provided with each coach. The locks shall be standardized so that only one tool is required to open all major access doors on the coach. All locks shall have grease fittings installed. A counter-balance or spring system should operate large doors but, if not practicable, a powered assist device may be used, provided it is equipped with an emergency system to open the doors manually in less than 30 seconds. The emergency system shall be easily accessible and quickly operable by one person in the event of a power or air system failure or engine compartment fire.

The battery compartment construction shall prevent accumulation of snow, ice and debris around the batteries and shall be vented and self-draining. The compartment shall be accessible only from outside the coach. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from battery electrolyte. The inside surface of the battery compartment's access door shall be insulated, as required, to prevent the battery terminals shorting on the door if the door is damaged in an accident or if a battery comes loose.

The following access doors shall have embossed aluminum plates provided on the inside of the door displaying the following information: coolant, fuel, windshield washer fill.

5.2.1.9.3 **Engine Compartment Door**

The engine compartment door shall be lightweight and of sufficient strength to withstand daily opening and closing. It shall be hinged with stainless steel hinges and hinge mounting hardware at both rear side corner panels or on top. It shall be held securely in the open and closed position with the use of gas filled cylinders. Additionally, a mechanical locking device shall be provided to secure the door in the open position should the gas cylinders fail. No other latching or mechanism device shall be provided to hold door in the closed position. A black rubber-covered handle with minimum dimensions of 6 inches in length, 2 inches in height and of sufficient strength shall be provided to open the engine door. Engine coolant, lubricant, and transmission fluid shall be checked and added through the engine door. Door and hardware shall be approved by Port Authority.

5.2.2 **OPERATING COMPONENTS**

5.2.2.1 **PASSENGER DOORS**

5.2.2.1.1 **Control**

Operation of, and power to, the passenger doors shall be completely controlled by the driver. Doors shall open or close completely in 2 to 4 seconds from the time of control actuation and shall be subject to adjustment requirements of Section 5.2.2.1.3. A control or valve in the driver's compartment shall shut off the air to and/or dump the air from the front door mechanism to permit manual operation of the front door with the coach shut down. A master door switch shall be provided which, when placed in the "off" position, shall close the rear passenger doors with air pressure, de-activate the rear door controls, and release the brake and throttle interlocks, in that order. The master door switch shall not affect the front passenger door operation. The master door switch shall not be within reach of a seated driver. Location of the master door switch shall be approved by the Authority.

To preclude movement of the coach, an accelerator interlock shall lock the accelerator in the closed position and a brake interlock shall engage a portion of the rear axle service brake system when the rear door control is activated. The braking effort shall be adjustable with hand tools only, from zero effort to the maximum capability of the rear axle brakes. The adjustment device shall be enclosed in a tamper proof housing if located inside the coach. The rear doors shall be equipped with pneumatic type sensitive edges which, when activated, will cause the doors to reverse direction immediately, open completely, and then reclose. When the rear doors are closed, these same pneumatic type sensitive edges will sound a buzzer in the operator's compartment when they are pushed, pulled, or otherwise activated.

5.2.2.1.2 Closing Force

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.

5.2.2.1.3 Actuators and Auxiliary Equipment

Complete door actuator units shall be manufactured by U.S. Vapor Corporation or Approved Equal. The differential air-operated door motors shall be adjustable so that the door opening and closing speeds can be independently adjusted from 2 to 4 seconds. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing. Operator's door control valve and other auxiliary equipment (as required) shall be manufactured by U.S. Vapor Corporation or Approved Equal. Door linkage shall have lubrication points and fittings to allow load-carrying bearings to be greased periodically. All elements of the door and actuator system shall operate without a Class 3 failure for 50,000 miles on the design operating profile.

5.2.2.1.4 Emergency Operation

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. Opening the access door to the rear door emergency actuator shall cause an audible intermittent tone (beeper) alarm to sound in the operator's cab. A decal shall be located on the on the access door to the emergency door release valve. The decal shall read "For Emergency Door Release - Open door, turn handle, push doors outward". 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.

5.2.2.2 WINDSHIELD WIPERS AND WASHERS

5.2.2.2.1 Windshield Wipers

The coach shall be equipped with a Sprague or Approved Equal 24VDC electric, variable speed windshield wiper for each half of the windshield with separate controls for each side. Wiper motor shall incorporate "all-metal gear" construction. No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms. At 60 mph, no more than 10 per cent of the wiped area shall be lost due to windshield wiper lift. Wiper sweep shall cover the full width of each windshield to within one (1) inch of the center divider (if used) and two (2) inches of the outer windshield edges. Both wipers shall park along the center vertical edges of the windshield glass. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service from inside or outside the coach and shall be removable as complete units. 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. After each pause, the wiper shall make one complete cycle and return to the park position automatically. The fastener that secures the wiper arm to the drive mechanism shall be corrosion resistant.

5.2.2.2.2 Windshield Washers

The windshield washer system shall include a wet arm to deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiped area. The system shall utilize a pump to force the washing fluid to the windshield.

The windshield washer system shall have a minimum 3-gallon reservoir, located for easy refilling. Reservoir pumps, lines and fittings shall be corrosion-resistant, and the reservoir itself shall be translucent for easy determination of fluid level. The reservoir filler flip-type cap shall be retained in the closed position by use of a spring. Access to the reservoir shall not require the use of any tools.

5.2.2.3 LIGHTING, CONTROLS, INSTRUMENTS

5.2.2.3.1 Exterior Lighting

All exterior lighting shall be nominal 12VDC and sealed to prevent accumulation of moisture or dust, and each lamp shall be replaceable in less than 5 minutes by a 2M mechanic. All exterior lights (except headlights) shall be Dialight LED type. The coach manufacturer must make accommodations to accept the Dialight LED lamps and incorporate these into the coach design. Lamps on the engine compartment door shall be mounted in rubber grommets but shall also incorporate a method to assure the lights are

unable to rotate within the grommets. Exterior LED lamps shall be coated and voltage regulated.

Four way flasher lamps at the rear of the coach shall be visible from behind when the engine service door is opened. If this is accomplished with the use of two additional lamps located on the inside of the engine door, a switch shall be installed to prevent their activation when the door is in the closed position. Lamps, lenses and fixtures shall be interchangeable to the extent practicable.

Exterior vehicle lighting shall conform to FMVSS 108. Each coach shall be equipped with the number of lamps, reflective devices and associated equipment specified in Table 1 of 49 CFR 571.108. Exterior lighting and associated equipment shall be located in accordance with Table II of 49 CFR 571.108.

The coach shall be provided with "sealed beam" automotive headlights of countersunk type having tilt ray features which shall be controlled by a button dimming switch mounted on floor convenient to operator's left foot. The coach shall be equipped with Daytime Running Lights which shall consist of the high beam of the headlights operated at a reduced brightness.

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.

Brake lights located on the rear of the bus shall be activated by the use of an air pressure switch. In addition to the two standard brake lights, a third light shall be mounted on the center line of the coach above the engine door. The third brake light shall be mounted in a rubber grommet. Brake lights shall be illuminated when the parking brake is applied shall be deactivated when the Master switch is turned off.

Turn signals shall be provided on the front (amber) and rear (amber) of the bus. The front turn signal lights shall be visible from the side of the coach. The signals shall be located opposite each other and in a position standard to the manufacturer's design.

In addition, amber turn signal lamps shall be located at the right and left, front and rear fender wells and at mid bus for vehicle lengths exceeding 40 foot and shall operate in conjunction with the standard turn signals. Exact location shall be determined after contract award. These lamps shall be Dialight #180-01AB-804 LED type with associated stainless steel guard or Approved Equal.

Sealed and polarized plugs shall be provided for all vehicle lamp fixtures to facilitate replacement.

Red	4" dia, 3-wire shall be Dialight 46121RB824 In locations that require only a 2-wire red LED, the 3-wire light shall be used in place of the 2-wire light. In those instances, the bus harness will require the 3-wire weather-pack with one blank or 'dummy' plug installed to seal the connector.
Amber	4" dia, 2-wire shall be Dialight 46121AB805
White	4" dia, shall be Dialight 46121CB805

Ground wires shall be included since ground wires are not permitted to be attached to fixture mounting bolts. Lamp fixtures must be removable from one side only.

LED side clearance, side marker and identification lamps shall be provided at the front, side, and rear of vehicle in accordance with SAE J592.
Lamps at the front and rear passenger doorways shall comply with 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.

All exterior and tail lights shall be sealed.

Exterior lighting shall be approved by the Authority.

5.2.2.3.2 Service Area Lighting

Five (5) white LED lights, the same as used for the "back-up" lights, or Approved Equal assemblies shall be provided in the engine compartment to generally illuminate the area for night emergency repairs or adjustments. The lights shall be controlled by a switch located near the rear start controls in the engine compartment. All areas that have serviceable components shall have white LED lights installed. These lamps shall be provided with a switch on the light fixture or convenient to the light. All service area lighting shall be 12 VDC.

5.2.2.3.3 Passenger Interior Lighting

The passenger interior lighting system shall be DINEX lighting system or Approved Equal. The interior lighting system shall provide a minimum 15 foot-candle illumination on a 1 square foot plane at an angle of 45 degree from horizontal, center 33 inches above the floor and 24 inches in front of the seat back at each seat position. Allowable average light level for the rear bench seats shall be 7 foot-candles. Floor surface in the aisles shall be a minimum of 10 foot-candles, vestibule area a minimum of 4 foot-candles with the front doors open and minimum of 2 foot-candles with the front doors closed.

The 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. 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. The lighting system shall interface with vehicle multiplex control systems supplied by various vendors through J1939 gateway with serial data input or discrete inputs to automatically adjust the brightness of each individual light fixture to improve driver's visibility when the windshield wiper motor is set at high speed.

The system shall utilize high power, solid state LEDs with expectation to maintain on average 60-70% of original brightness after 60,000 hours of operation.

Lens material shall be non-flammable polycarbonate in compliance with Doc 90A. Lens shall be designed to effectively "mask" all individual LED's to make them invisible and there shall be no visible "hot spot" or "dark spot". Lens shall be sealed to inhibit incursion of dust and insects yet are easily removable for service. If threaded fasteners are used they must be held captive in the lens. Access panels shall be provided to allow servicing of components located behind light panels.

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

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.

Lighting Operation

The forward lamps on both the right and left sides of the coach interior shall operate in conjunction with the front door lamps. A three-position switch shall be provided to allow the operator to override this feature in the "ON" position. This switch should be identified as ON-OFF-NORMAL. This switch shall be installed adjacent to the regular interior lamp control switch.

With the lighting switch is in the NORMAL position and the master switch is in the DAY/RUN position:

- All interior passenger lighting shall be on and dimmed to a 20% level.

With the lighting switch is in the NORMAL position and the master switch is in the NITE/RUN position:

- When both passenger doors are CLOSED, the first light module on each side of the coach shall be at the 10% level. All other passenger light modules shall be at a 40% level.
- When the front or rear passenger door is OPEN, all interior lights will brighten to the 80 percent level.
- The first light module on each side 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.

Position of the lighting fixtures shall not interfere with window replacement.

A light shall be installed directly over the space provided for the farebox. It shall operate when the main interior lights are on. This lamp assembly shall be a Dialight LED or Approved Equal.

Passenger lighting shall not be installed above the driver's side window and the front door. Lighting fixtures shall extend to the rear bulkhead, or as close as possible, utilizing a combination of standard sizes. Lamp fixtures and lenses shall be fire-resistant and shall not drip flaming material onto seats or interior trim if burned. Advertising media located in this area shall be illuminated by direct lighting only. The fixtures shall be sealed to prevent accumulation of dust and insects but shall be easily opened on hinges for cleaning and service. The lenses shall be retained in a closed position, and if threaded fasteners are used, they must be captive in the lens with tamperproof type screws. Interchangeability of lenses, fixtures, and power supplies shall be maximized. Lighting shall be the front-lit type.

An overhead stepwell lighting system shall be illuminated when the master switch is on RUN and NITE/RUN, except for the front stepwell lamps which shall be extinguished when the doors are closed. The lights shall be positioned under the door headers. The system shall provide no less than 2 foot-candles of illumination on the entry and exit step treads with the doors open. These lights shall be shielded to protect passengers' eyes from glare. Light fixtures shall be totally enclosed, splashproof, designed to provide ease of cleaning as well as lamp and housing removal, and shall not be easily removed by passengers. In addition, four (4) step lights shall be provided at both the front and rear stepwells. These may be mounted in the fore and aft modesty panels and step risers. These front step lights shall be extinguished when the front doors are closed. These lights shall be shielded to prevent glare to the driver, on-board passengers and boarding passengers. Stepwell lights shall be protected from damage caused by passengers kicking lenses or fixtures and shall not be a hazard to passengers.

All lighting fixtures and method of control shall be approved by the Authority.

5.2.2.3.4 Driver's Lighting

The driver's area shall have a light to provide general illumination. It shall illuminate the half of the steering wheel nearest the driver to a level of 10 to 15 foot-candles. This light shall be controlled by a switch that is convenient to the driver. Operating voltage shall be 12VDC.

5.2.2.3.5 Driver Controls

All switches and controls necessary for the operation of the coach shall be conveniently located in the driver's area and shall provide for ease of operation. Switches and controls shall be essentially within the hand reach envelope described in SAE Recommended Practice, J287, "Driver Hand Control Reach". Controls shall be located so that boarding passengers may not easily tamper with control settings.

Accelerator and Brake pedals shall be incorporate into a Kongsberg, or Approved Equal, floor adjustable pedal system, appropriately configured for the bus' engine and brake valve configuration. Pedal adjustment controls shall be dash mounted and disabled unless the vehicle is secured with parking brake activated. Accelerator and brake pedals shall be designed for ankle motion. Accelerator shall have a minimum 45° angle with respect to the floor. Brake pedal shall have a minimum 35° angle with respect to the floor. Foot surfaces of the pedals shall be faced with wear-resistant, non-skid, replaceable material. Pedal travel shall be limited by stops under the pedals.

Controls for engine operation shall be closely grouped within the driver's compartment. These controls include separate master run switch and start switch/button. The start button shall be a Delco with rubber boot. The run switch shall be a four-position rotary switch with the following functions:

OFF	--	All electrical systems off; except power available for the interior lighting, stoplights, turn lights, hazard lights, silent alarm, horn, radio, and farebox.
DAY/RUN	--	All electrical systems and engine on; except the headlights, parking lights, and marker lights.
NITE/RUN	--	All electrical systems and engine on.
CL/ID	--	All electrical systems off; except those listed in OFF and power to marker lights.

The door control, kneel control, wiper/washer controls, run switch, and emergency flasher switch shall be in the most convenient driver location. They shall be identifiable by shape, touch, and markings. Doors shall be operated by a momentary contact push button control for each door, conveniently located and operable in a horizontal plane by the driver's left hand. A single push button shall serve to open and close each door. The door controls shall illuminate when the door is in the open position. The setting of this control shall be easily determined by position and touch. The emergency flasher shall be located in close proximity to the door control. The type and location shall be approved by Port Authority. Turn signal and high beam controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty momentary contact switches.

All switches and controls shall be marked with easily-read identifiers. Foot controls -- left and right turn, high beam -- shall be identified on a plate mounted to the dashboard. All panel-mounted switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from the vestibule or the driver's seat. Switches, controls, and instruments shall be dust-resistant and water-resistant consistent with the coach washing practice as described in Section 5.2.3.1. Wording that identifies switches and controls shall be back lit. The wording shall be permanently incorporated into the panel. If this is not possible, a Lexan cover sheet 1/10 inch minimum shall be placed over the entire switch panel to protect wording from being abraded away. For all required switches and controls, see below. Location of switches shall be approved by Port Authority.

DRIVER SWITCHES AND CONTROLS

SWITCHES

Master run switch
Start button or switch
Kneel switch (guarded)
Foot-controlled turn signal switches
Brake and Throttle pedal adjustment
Interior lighting switch
Front lighting switch
Instrument panel lighting intensity control (dimmer)
Driver's area light switch
Hazard warning switch
Horn button in steering wheel hub, protected to preclude accumulation of transfer punches in steering wheel hub.
Foot-controlled headlight dimmer switch
Fast idle switch
Diagnostic light panel test switch
ABS test switch
Diagnostic electronic component code switch
Engine override switch
Master door switch
Public Address Speaker switch (interior, exterior, both)
Driver's heat-A/C booster blower switch
HVAC Ambient over ride switch (guarded)
Hill Hold braking switch
Dynamic braking Normal/Winter mode switch
Video surveillance Event Switch

CONTROLS

Accelerator pedal
Brake pedal
Door control
Windshield wipers (including intermittent function)
Windshield washers
Climate control touch pad
Defroster control
Driver's heater control(s)
Parking/emergency brake control (actuation of brake, not control, shall be indicated to the driver)
Emergency brake release
Wheelchair loading device
Transmission control

Front door dump valve
Public Address volume control
Automated Stop Announcement System controls
Destination sign controls
Fire Suppression System Controls

5.2.2.3.6 Instrumentation

The speedometer, air pressure gauge(s), voltmeter, and certain indicator lights shall be located on the front cowl immediately ahead of the steering wheel. The steering wheel spokes or rim shall not obstruct the driver'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 in the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized. Instruments and indicators shall be easily readable in direct sunlight. Indicator lights immediately in front of the driver shall include:

Headlamp high beam
Right turn
Left turn
Hazard warning (may be common with turn indicators)
Exit door open
Parking brake applied
Service brakes applied (may be common with parking brake indicator)
Retarder

The instrument panel shall include a speedometer indicating no less than 80 mph and calibrated in maximum increments of 1 mph. The speedometer shall utilize the SAE J1939 CAN Network for the input signal. An odometer with a capacity reading no less than 999,999 miles shall also be provided. The instrument panel shall also include air brake reservoir pressure gauge(s) (minimum 3-inch diameter) with indicators for primary and secondary air tanks and voltmeter(s) to indicate the operating voltage across the coach batteries. The instrument panel and wiring shall be easily accessible for service from the driver's seat or top of the panel. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires. The indicator cluster shall be suitably protected to prevent damage.

5.2.2.3.7 Onboard Diagnostics

Critical systems or components shall be monitored with a built-in diagnostic system. This diagnostic system shall have visual and audible indicators. The diagnostic indicator lamp panel shall be located in clear sight of the driver but need not be immediately in front of him. The intensity of indicator lamps shall permit easy determination of on/off status in bright sunlight but shall not cause a distraction or visibility problem at night. All indicators shall have a method of momentarily testing the operation of the lamp only. This shall be accomplished through the use of a single switch. Wherever possible, sensors shall be of the closed circuit type, so that failure of the circuit and/or sensor shall activate the malfunction indicator. An audible alarm shall sound when certain malfunctions are detected by the diagnostic system. The audible alarm shall be loud enough for the driver to be aware of its operation and to be inclined to discontinue operation of the coach. Audible alarms shall have the sounds as listed on the "Onboard Diagnostic Indicators" list. Malfunction and other indicators, shown on the "Onboard Diagnostic Indicators" list, shall be supplied on all coaches.

Space shall be provided on the panel for future additions of no less than 5 indicators as the capability of onboard diagnostic systems improve.

ONBOARD DIAGNOSTIC INDICATORS

VISIBLE INDICATOR	AUDIBLE ALARM	FUNCTION
Low oil - (hyd)	No	Hydraulic system
Low oil - (eng)	Yes (buzzer)	Engine oil pressure low
Low air	Yes (buzzer)	Air system pressure low in primary or secondary reservoirs.
Generator stop	No	Generator not charging
Kneeler	Yes (beeper)	Kneeling system activated
Wheelchair Loading Device activated	Yes (beeper)	Wheelchair ramp system
Hot transmission temperature high	Yes (buzzer)	Transmission oil
Rear or Exit Door	No	Rear or exit door activated
None	Yes (buzzer)	Sensitive edge of center activated when door is closed
None	Yes (beeper)	Rear door emergency switch compartment opened
Hinge Alarm (if applicable)	Yes (buzzer)	Articulation hinge angle exceeded and anti-jackknife system failure.

Fire (Amerex)	Yes (alarm)	Extreme engine compartment temperature. (The alarm shall be separate from the other audible alarm(s))
Stop Request	Yes (chime)	Passenger stop request
W/C Position request	Yes (chime)	W/C passenger stop

5.2.2.3.8 Engine, Transmission, and Other Electronic Component Diagnostics and Alarms

In addition to diagnostic indicators shown on the "Onboard Diagnostic Indicators" list, contractor must provide all indicators and alarms which are available from the engine, transmission and other electronic component suppliers.

5.2.3 INTERIOR COMPONENTS AND TRIM

5.2.3.1 GENERAL REQUIREMENTS

The interior shall be generally pleasing, simple, modern, and free from superficial design motifs. It shall have no sharp depressions or inaccessible areas and shall be easy to clean and maintain. To the extent practicable, all interior surfaces more than 10 inches below the lower edge of the side windows and 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 will not normally be sprayed directly on the instrument and switch panels. Handholds, lights, air vents, armrests, and other interior fittings shall appear to be integral with the coach interior. There shall be no sharp, abrasive edges and surfaces and no unnecessary hazardous protuberances. All plastic and synthetic materials used inside the coach shall be fire-resistant with the exception of vinyl seat coverings, which shall meet the requirements of Federal Specification CCC-A-680a Class 2(a)1, and seating upholstery textiles, which shall meet the requirements for textiles in Federal Aviation Regulations § 25.853 (b).

Materials shall be selected on the basis of maintenance, durability, appearance, safety, flammability, and tactile qualities. Fiberglass (if used) shall be color impregnated throughout its full thickness or jelcoated and not painted. 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 markings. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions. All materials shall be approved by Port Authority.

5.2.3.1.1 Trim Panels

Lower interior side trim panels and driver's barrier shall be melamine material. The lower sidewall (below windows) panels grain (if a grain is used) shall run longitudinally and the driver's barrier shall run vertically. Colors of melamine will be provided to the successful bidder at the Engineering Design Review Meetings.

The upper sidewall (window area) panels shall be melamine material. Colors of melamine material will be provided to the successful bidder at the Engineering Design Review Meetings. The grain (if a grain is used) of the material shall run vertically.

Melamine material shall permit easy removal of paint, greasy fingerprints, and ink from felt tip pens. Panels shall be easily replaceable but tamper-resistant from passengers. They shall be reinforced, as necessary, to resist vandalism and other rigors of transit coach service.

Interior mullion trim, moldings, and trim strips shall be stainless steel. 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 5.2.1.1.3. Colors, patterns, and materials for the interior trim shall be approved by Port Authority.

5.2.3.1.2 Headlining

Ceiling panels shall be melamine material or Approved Equal. Color will be provided to the successful bidder at the Engineering Design Review Meetings. Headlining shall be supported with a molding to prevent buckling, drumming, or flexing and shall be secured without loose edges. Headlining panels shall be installed with the grain (if a grained pattern is used) running in a transverse direction. Headlining panels covering operational equipment that is mounted above the ceiling shall be attached with hinges and 1/4 turn tamperproof fasteners for ease of service. A safety chain or cable shall be included in the design to prevent the panel from inadvertently opening and striking a passenger. Colors, patterns and materials for headlining shall be approved by Port Authority.

5.2.3.1.3 Front End

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. Formed metal dash panels shall be painted and finished to exterior quality. 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.

5.2.3.1.4 Rear End

The rear bulkhead and rear interior surfaces shall be covered with vandal proof upholstered fabric. Color will be provided to the successful bidder at the Engineering Design Review Meetings. Colors, patterns, and materials shall be approved by Port Authority.

5.2.3.1.5 Passenger Information and Advertising

An advertising sign frame shall be provided on the rear of the driver's barrier to retain information, sized 21 inches wide and 22 inches high, posted by Port Authority, such as routes and schedules. Advertising media 11 inches high and 0.09 inches thick shall be retained near the juncture of the coach ceiling and side wall. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the interior fluorescent lighting system and not back-lighted.

5.2.3.2 PASSENGER SEATS

5.2.3.2.1 General Design and Structure

The design of the seat shall be based on requirements defined to obtain a structure which will conform to the strength, performance, and dynamic tests specified.

The general design of the seat shall offer superior product and functional values with features providing optimum comfort and safety for the passenger.

The supplier will put forth its best efforts to achieve the objectives of the Americans with Disabilities Act (ADA) and the Federal Motor Vehicle Safety Standards (FMVSS) and its amendments. Specific consideration shall be given to passenger seating performance and crash protection, especially in endeavors to provide seats and seat anchorage's, elimination of lethal surfaces, and a structure that will deflect in a controlled manner to absorb the energy generated by declarative impacts that is imparted to the occupant.

Seat type shall be American Seating Model #6468, Freedman Seating Angel model, or Approved Equals. Seats shall be mounted on tracks to facilitate minor adjustments to the seating arrangements. Seats shall incorporate non-padded seat back and seat bottom fabric covered Vandal Resistant (VR) inserts. Each bidder proposing an alternative seat shall supply one complete sample transverse seat mounted to a display platform as part of their Request for Approved Equals.

The passenger seat frame and its supporting structure shall be constructed and mounted so that space under the seat is maximized to increase wheelchair maneuvering room and is completely free of obstructions to facilitate cleaning. The structure shall be fully cantilevered from the sidewall with sufficient strength for the intended service. The seats shall be mounted on a wall-mounted track to allow forward and aft adjustments to the seating positions. The lowest part of the seat assembly that is within 12 inches of the aisle shall be at least 10 inches above the floor (except for the mounting of under-seat heaters, if required). The underside of the seat and the sidewall shall be configured to prevent debris accumulation and the transition from the seat underside to the coach sidewall to the floor cove radius shall be smooth.

Longitudinal seats shall be of the same general design as transverse seats but without seat back handholds. Longitudinal seats shall be mounted as close to the sidewall as practicable to maximize aisle space. Armrests shall be included on the ends of each set of longitudinal seats and shall be located from 7 to 9 inches above the seat cushion surface. The area between the armrest and the seat cushion shall be closed by a barrier or panel and shall be constructed and trimmed to complement the seat panels. The top and sides of the armrests shall have a minimum width of 2 inches and shall be free from sharp protrusions that form a safety hazard.

5.2.3.2.2 Testing and Strength Requirements

All transverse objects - including seat backs, modesty panels, and longitudinal seats - in front of forward facing seats shall not impart a compressive load in excess of 1,000 pounds onto the femur of passengers ranging in size from a 5th percentile female to a 95th percentile male during a 10g deceleration of the coach. Permanent deformation of the seat resulting from two 95th percentile males striking the seat back during a 10g deceleration shall not exceed 2 inches, measured at the aisle side of the seat. Structural failure of any part of the seat or side wall shall not introduce a laceration hazard.

The seat assembly shall withstand static vertical forces of 500 pounds applied to the top of the seat cushion in each seating position with less than ¼ inch permanent deformation in the seat or its mountings. The seat assembly shall withstand static horizontal forces of 500 pounds evenly distributed along the top of the seat back with less than ¼ inch permanent deformation in the seat or its mountings. The seat backs at the aisle position and at the window position shall withstand repeated impacts of two 40-pound sandbags without visible deterioration. One sandbag shall strike the front 40,000 times and the other sandbag shall strike the rear 40,000 times. Each sandbag shall be suspended on a 36-inch pendulum and shall strike the seat back 10,000 times each from distances of 6, 8, 10, and 12 inches. Seats at both seating positions shall withstand 4,000 vertical drops of a 40-pound sandbag without visible deterioration. The sandbag shall be dropped 1,000 times each from heights of 6, 8, 10, and 12 inches. Seat cushions shall withstand 100,000 randomly positioned cycles, from a 150-pound, smooth-surfaced buttocks-shape striker with only minimum wear on the seat covering.

The back of each transverse seat shall incorporate a stainless steel handhold no less than $^{7}/_{8}$ inches in diameter for standees and seat access/egress. The handhold shall not be a safety hazard during severe deceleration. The handhold shall extend above the seat back near the aisle so that standees shall have a convenient vertical assist, no less than 4 inches long, that may be grasped with the full hand. This handhold shall not cause a standee using this assist to interfere with a seated 50th percentile male passenger. The handhold shall also be usable by a 5th percentile female, as well as by larger passengers, to assist with seat access/egress for either transverse seating position. Armrests shall not be included in the design of transverse seats.
Longitudinal seat back handholds and armrests shall withstand static horizontal and vertical forces of 250 pounds applied anywhere along their length with less than ¼ inch permanent deformation. Seat back handholds and armrests shall withstand 25,000 impacts in each direction of a horizontal force of 125 pounds with less than ¼ inch permanent deformation and without visible deterioration.

Passenger head protection and the seat back handhold shall be built integrally into the seat. Padding shall not be provided on modesty panels located immediately forward of transverse seats. Protection shall be afforded to passengers ranging in size from a 6-year old child to a 95th percentile male to prevent head injury of more than 400 HIC during a 10g deceleration. The minimum radius of equipment in any portion of the head or chest impact zone shall be a nominal ¼ inch. Armrests shall be padded with material that is the same as, or similar to, the seat back padding and handholds. All material and workmanship shall conform to SPI standards and specifications in tests for plastic foam. The material shall have high resistance to tearing, flexing, and wetting. All materials used in the seat assembly shall meet the flammability requirements of Federal Motor Vehicle Safety Standard No. 302. In addition all foam utilized shall pass the ASTM Smoke Generation Test E662, and Compression Set D3574 (50% deflection).

5.2.3.2.3 Construction and Materials

Seat mounting materials shall be fiberglass, polycarbonate, or nylon and shall be attached to the frame with tamper proof fasteners. Coloring shall be consistent throughout the seat material, with no visually exposed portion painted. All exposed metal of the standard seat structure shall be rust-resistant stainless steel. Internal seat framing shall be powder coated steel or Approved Equal. The seat shall be contoured for individuality, lateral support, and maximum comfort and shall fit the framework to reduce exposed edges. The seat back thickness shall not exceed 2 inches in the knee room area. The seat forward of a seated passenger shall absorb energy in a severe crash by allowing the passenger's knees to deform the seat back in accordance with the requirements of Section 5.2.3.2.2. Complete seat assemblies shall be interchangeable to the extent practicable.

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 the maintenance staff but not by the passengers. To the extent practicable, seat cushions and pads shall be interchangeable throughout the bus. Materials shall have high resistance to tearing, flexing, and wetting.

5.2.3.2.4 Seat Dimensions and Arrangement

Individual seat positions shall have the following dimensions: seat bottom width 17 ± 1 inches, seat bottom length 17 ± 1 inches, seat back width 17 ± 1 inches, seat back height 19 ± 1 inches. Transverse seats shall have a nominal seat pitch of 30 inches with a hip-to-knee room dimension of no less than 29 inches at all seating positions. Minimum foot room shall be 14 inches which may be reduced to 9 inches at the wheel housing positions. Seating capacity shall be no less than 39 persons. The coaches shall have as many forward facing seats as possible.

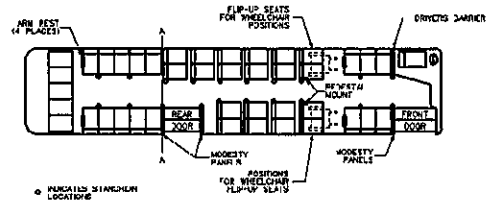
Left (street side) of coach shall utilize double (two-passenger) transverse seats. Right (curb side) of coach shall utilize double (two-passenger) transverse seats.

Rear seat group shall accommodate five (5) passengers. This requirement may be reduced to four (4) seats if necessary for engine installation. If access hatches are utilized under the rear seat backs or seat bottoms, a hinged seat group shall be provided. The three middle seats shall be hinged at the top of the seat back. The seat backs and bottoms should rise up together. A support prop located under the seat bottom shall be provided to hold the seats in the raised position. No fastener which requires tools shall be used to hold the rear seat in place.

For wheelchair accommodations, two triple longitudinal seat groups shall be flip-up type locking in the up and down positions and be installed behind the curbside and roadside wheelhousings. Pedestal-mounted barriers shall be used aft of each longitudinal wheelchair seat group for support. Wheelchair safety belts shall be attached to the barrier or seat bottom, not to the floor. A hand strap shall be secured to the underside of the flip-up seat to provide a handhold for the wheelchair passenger. This hand strap is the same as the passenger assist straps in Section 5.2.6.3.1. The hand strap shall be located near the armrest of a properly positioned wheelchair.

See Figure 5.2.3.2.4-A "Seating Arrangement, 40 Foot Transit Coach" for seating arrangement and stanchion location. This drawing should serve as a guide for the general seating arrangement. Modifications will be necessary for different manufacturer's bus designs.

Figure 5.2.3.2.4-A Seating Arrangement



5.2.3.2.5 Wheelchair Restraint

5.2.3.2.5.1 General Specifications

The wheelchair restraint system shall accommodate a range of wheelchairs commonly available to handicapped persons and shall not require any manual adjustments to meet this requirement. The restraint system shall consist of one retractable lap/shoulder belt, four retractable chair restraint straps, and additional belts as needed to meet the ADA requirements in effect at the time of contract award.

The lap/shoulder belt shall be attached to a structural column or window stringer.[2] Two (2) retractable self locking belts located at the rear of the wheelchair and attached to the legs of the barrier. Two (2) self-retracting[2] belts with knobs located at the forward position of the wheelchair. Slack adjustment shall be accomplished by utilizing an adjusting knob located on the housing of the belt.
All four (4) wheelchair restraint belts shall utilize hooks for attachment to the wheelchair. The two (2) forward belts shall be attached to a stainless steel fixture which pivots or telescopes and is attached to the bulkhead or floor[2]. The fixture shall swing or retract toward the sidewall when not in use eliminating the use of floor plates. All wheelchair belts shall have a zinc alloy diecast cover.

When secured by the restraint system, the wheelchair shall be prevented from side slipping, pivotal rotation, forward and backward motion, and overturning due to the motion and maneuvering of the bus.

The restraint system shall be designed and manufactured so as to minimize pilferage and/or vandalism. All belts shall be captive. The restraint system for wheelchairs shall be manufactured by American Seating, Freedman Seating or Approved Equal.
Wheelchair restraint shall be constructed from stainless steel or aluminum. Manufacturer shall provide all necessary training, installation, hardware, instruction, maintenance and part manuals.

The wheelchair restraint system shall be warranted against operational problems resulting from manufacturing and/or design defects. Each restraint unit shall be serialized for warranty tracking purposes.

5.2.3.2.5.2 Safety Requirements

All structural/load bearing members of the restraint systems are to be made of stainless steel or aluminum. The wheelchair restraint system shall restrain the wheelchair in a forward-facing direction in the bus.

All parts which attach the restraint to the bus, as well as all parts of the restraint, shall be capable of withstanding any load developed by a 1,000-pound horizontal deceleration force as might be created by the combined weight of restraint and wheelchair in an emergency situation. The wheelchair restraint system shall be of proven quality and shall function without failure or readjustment for 500 cycles (restraining a wheelchair and releasing restraint belts is defined as one cycle). This is the case for all operating conditions.

Any switches, sensing devices and/or electrical components shall be sealed to prevent contamination by water, humidity, dust, or dirt. Also, they shall be of proven quality and shall not require adjustment or replacement under normal usage.

5.2.3.2.6 Seat and Upholstery Colors

- Seat back panel and trim panels shall be Charcoal or 980 Grey or Approved Equal.
- Seat back cushion shall be Holdsworth #BCDJ 25845 or Approved Equal.
- Seat bottom cushion shall be Holdsworth # BCDJ 25845 or Approved Equal.

5.2.3.3 DRIVER'S SEAT

The driver's seat shall be a, Recaro Ergo M (3-pt), USSC Model 9100 ALX or Approved Equal orthopedically designed and constructed air-cushioned seat with a high back seat back, no headrest, and no armrests. The seat shall have a stainless steel base. The seat shall have air suspension with at least two (2) pneumatic or mechanical lumbar supports. The air suspension/spring and height adjustment shall be independent of each other. The seat shall be designed and constructed to reduce driver fatigue, lower back injuries, and vertical compression spinal injuries, and to facilitate drivers weighing from 100 lbs. to 400 lbs. The seat shall be of heavy duty construction. Seat back tilt shall be adjusted by knobs on both sides of the seat. These shall be located at the juncture of the seat bottom and seat back. Seat bottom tilt shall be adjusted by knobs on both sides of the seat. These shall be located on the seat bottom approximately halfway between the front and rear edge of the seat bottom. Height adjustment shall be located on the left side of the seat at the forward edge. Lumbar and side bolster controls shall be switches and shall be located on the right side of the seat. Forward and aft movement of the seat shall be accomplished through the use of an air powered slide release. The seat shall incorporate electrical switches to indicate when the seat belt is fastened and when the seat is occupied. These switches shall be used to provide an audible and visual alarm indication if the operator leaves the seat while the parking brake has not been set and to provide a visual indication if the seat is occupied and the seat belt is not fastened. Driver's seat and installation shall be approved by Port Authority.

5.2.3.3.1 Dimensions

The driver's seat shall be comfortable and adjustable so that persons ranging in size from the 95th percentile male to the 5th percentile female may operate the coach. The driver's seat cushion shall have a minimum width of 18 inches, a length of 16 to 18 inches, and rearward slope of 5 ± 5 degrees. The driver's seat back height, measured from the point of intersection of the uncompressed seat cushion with the seat back to the top of the back, shall be 20 ± 2 inches. The angle formed between the seat back and the seat cushion shall be adjustable in the range of 95 to 135 degrees. Height of the seat shall be pneumatically adjustable so that the distance between the top of the uncompressed seat cushion and the floor may vary between 17 and 21 inches. The seat shall be adjustable forward and rearward for a minimum travel of 9 inches. While seated, the driver shall be able to make all of these adjustments by hand without complexity, excessive effort, or being pinched. Adjustment mechanisms shall hold the adjustments and shall not be subject to inadvertent changes.

5.2.3.3.2 Structure and Materials

The driver's seat shall be contoured to provide maximum comfort for extended periods of time. Cushions shall be fully padded with polyurethane foam, or material with equal properties, in the seating areas at the bottom and back. Upholstery shall be fabric, and the suspension close-out shall be black or charcoal in color. The full rear of the seat back shall be constructed from a hard shell material such as fiberglass to prevent damage from equipment located behind the seat. All visually exposed metal on the driver's seat, including the riser, shall be unpainted stainless steel. Required seat belts shall be fastened to the seat so that the seat may be adjusted by the driver without resetting the seat belt. Seat belts shall be stored in automatic retractors. Belt and retractor should be located on the left side of the driver's seat and extend to the right side where the connection is made. Color of the driver's seat upholstery shall be approved by Port Authority. The driver's seat shall be cushioned supplementally by an air cylinder or air diaphragm. These devices may also provide the seat height adjustments. Damping shall be provided as required and prevent bottoming of mechanism when driving across road dips.

5.2.3.3.3 Seat and Upholstery Covers

Covering material for the top of the seat cushion and the front of the seat back shall be a heavy duty woven fabric.

A - This material shall be supplied by Holdsworth # BCDJ 25845or Approved Equal.
B - This material shall be supplied by Holdsworth #BCDJ 25847 or Approved Equal.

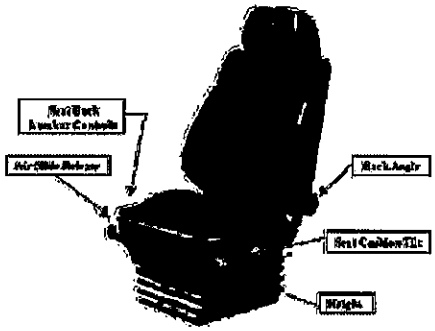


Figure 5.2.3.3-A

5.2.3.4 FLOOR COVERING

5.2.3.4.1 Vestibule

The floor in the vestibule shall be covered with Altro non-skid material that remains effective in all weather conditions. The floor covering, as well as transitions of flooring material to the main floor and to the stepwell area, shall be smooth and present no tripping hazards. Color shall be Black and shall be consistent throughout the floor covering. A 2-inch white standee line shall be provided as an integral part of the vestibule floor covering. White lines, where used, should be consistent throughout the thickness of the flooring. Any metallic moldings, extrusions or trim in contact with floor, stepwells, or driver's platform shall be stainless steel.

5.2.3.4.2 Driver's Compartment

The floor in the driver's compartment shall be easily cleaned and shall be arranged to prevent debris accumulation. Any floor coverings shall be Altro non-skid, heavy duty material. Color of the driver's floor covering shall be coordinated with the vestibule.

5.2.3.4.3 Passenger Area

The floor in the passenger area shall be covered with Altro non-skid, heavy duty material. A center strip shall extend from the rear seat between the aisle sides of transverse seats to the standee line with as few seams as possible. This center strip shall be Mineral #TFCR 2730 color. The rear door and step area shall be Mineral #TFCR 2730.

The floor under the seats shall be covered with Altro Mineral #TFCR 2730 color. The floor covering shall closely fit the sidewall cove and extend to the top of the cove.

5.2.3.4.4 Step Wells

The edge of the floor covering material at the openings of the step wells and the edge of each riser shall be white, while forming an integral part of the floor covering material.

5.2.3.4.5 Installation

All joints must be flush and sealed to form a waterproof joint. The cement used to bond the floor covering to the plywood sub-floor must result in a permanent bond, impervious to water, salt, or a brine solution. Altro flooring shall be installed in accordance with manufactures recommended installation procedure/practices. All seams shall be heat "welded" in accordance with manufactures recommended procedures and shall be color coordinated with the flooring material on either side of the seam.

5.2.4 WINDOWS

5.2.4.1 FRONT CAB WINDOWS

5.2.4.1.1 Windshield

The windshield shall permit a driver's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 15°, measured above the horizontal and excluding any shaded band.

The vertically downward view shall permit detection of an object 3 ½ feet high no more than 2 feet in front of the coach. The horizontal view shall be a minimum of 90° about the line of sight. Any binocular obstruction due to a center divider may be ignored when determining the 90° requirement, provided that the divider does not exceed a 3° angle in the driver's field of view. Windshield pillars shall not exceed 10° of binocular obstruction. The position of the windshield within the coach structure shall permit the driver (with heights between a 5th percentile female and 95th percentile male) to view the right outside mirror through the wiped portion of the windshield at all seat height adjustments. The position of the windshield within the coach structure shall permit the driver (with heights between a 5th percentile female and a 95th percentile male) to view the left outside mirror through the driver's side window at all seat height adjustments. The windshield shall be designed and installed to minimize external glare as well as reflections from inside the coach. When the coach is operated at night with the passenger interior lighting on, essentially no reflections shall be visible in the windshield immediately forward of the driver's barrier. Reflections in the remainder of the windshield shall be minimized, and no reflection of any part of the coach interior behind the driver's barrier shall be visible in the windshield.

The configuration of the windshield shall consist of two separate units, one left, and one right. The individual units when installed in the bus shall be supported by a center post and the windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshields shall not be used. The glazing material shall have single density tint. The upper portion of the windshield above the driver's field of view shall have a dark, shaded band with a minimum luminous transmittance of 6 per cent when tested in accordance to ASTM D-1003.

5.2.4.1.2 Driver's Side Window

The driver's side window shall open sufficiently to permit the seated driver to easily adjust the left outside rearview mirror. This window shall have two sections, one fixed (the rearward) and one sliding (the forward). The sliding portion shall be non-latching and maintain its position during maximum acceleration and deceleration as described in the performance requirement section of this specification. The driver's window shall be configured such that drainage of water is to the outside of the coach. The mirror shall also hold its position due to road vibration. A position locking device shall be provided to secure the window in any open position. The driver's side window shall be designed to last the service life of the coach. The driver's side window shall not be bonded in place and shall be easily replaceable. The glazing material shall be laminated safety glass and have a single density tint.

5.2.4.2 SIDE WINDOWS

5.2.4.2.1 Dimensions

Side windows shall be manufactured by Atwood/Excell or Approved Equal with quick change glazing and shall extend from the shoulder height of a 5th percentile seated female passenger to the eye level of a 95th percentile standing male passenger. Vertical mullions between windows, including the trim, shall not exceed 7 inches in width. The windows shall have a fixed lower portion and shall incorporate an openable upper portion or transom. All side windows shall have emergency escape mechanisms. All side windows shall be easily replaceable without disturbing adjacent windows, and shall be mounted so that noise caused by flexing or vibration from engine operation or normal road excitation is not apparent.

The side windows' upper section or transom shall open inward. The transom shall be retained in the closed position by square 5/16-inch key locks. Transom windows, when unlocked, shall be held in the open or closed position by gas cylinders or springs. They shall not open or close inadvertently due to road vibration or air pressure changes in the cabin. The transom section shall also have a positive spring loaded thumb latch to keep the window from opening due to road vibration, etc., when the transom is unlocked.

The transom window shall extend the full width of the side passenger window. The window (fixed and transom sections) shall be framed as necessary to support glazing material.

5.2.4.2.2 Materials

The window frames shall be made from Anolok black anodized aluminum extrusions or Approved Equal. Window frames (outside) shall have drainage holes to prevent the build up of water. Side window glazing material shall have ¼-inch nominal thickness laminated safety glass. Windows on the coach sides and in the rear door shall be tinted a neutral (gray) color, complementary to the coach exterior. Glazing material installed in front doors shall be single density tint. The maximum solar energy transmittance shall not exceed 44 percent, as measured by ASTM E0424, and the luminous transmittance shall be twenty-five percent (25%) plus or minus five percent (± 5%) as measured by ASTM D-1003.

5.2.4.3 DESTINATION SIGN WINDOWS

Windows over the front and side destination signs shall be ¼-inch nominal thickness laminated safety glass and shall not be tinted. Windows shall not be bonded in place. An electric wire heating grid shall be installed on the inside of the front destination sign window to prevent fogging of the viewing areas. It shall be wired to operate when the coach HVAC system is in the heat mode and shall be equipped with a suitable thermostat circuit to prevent grid overheating.

5.2.4.4 ROOF ESCAPE HATCHES AND ROOF VENTS

The coach shall be equipped with two (2) roof escape/vent hatches, Spheros Vision glass hatch # RAL 7042 or Approved equal, which shall be captive and resetable from inside the coach when released.. The hatches shall be located one (1) forward, and one (1) aft, to the coach manufacturer's standard location. The roof escape hatches shall also function as manual roof vents. A decal giving operating instructions shall be installed at each roof escape hatch. Instructions shall be provided in the English language only.

5.2.5 INSULATION

5.2.5.1 MATERIAL

5.2.5.1.1 Properties

Any insulation material used between the inner and outer panels shall be fire-resistant and sealed to prevent entry of moisture and retention of moisture in sufficient quantities to impair insulation properties. Insulation properties shall not degenerate due to vibration compacting or settling during the life of the coach. The insulation material shall be nonhygroscopic and resistant to fungus and breeding of insects. Any insulation material used inside the engine compartment shall be fire-resistant and shall not absorb or retain oils or water.

5.2.5.2 PERFORMANCE

5.2.5.2.1 Thermal Insulation

The combination of inner and outer panels on the sides, roof, and ends of the coach, and any material used between these panels, shall provide a thermal barrier sufficient to meet the interior temperature requirements of the Technical Specification. The coach body shall be thoroughly sealed so that drafts cannot be felt by the driver or passengers during normal operations with the passenger doors closed.

5.2.5.2.2 Sound Insulation

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 dBA measured at the outside skin of the coach shall have a sound level of 65 dBA or less at any point inside the coach. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

The coach-generated noise level experienced by a passenger at any seat location in the coach shall not exceed 83 dBA and the driver shall not experience a noise level of more than 75 dBA under the following test conditions. The coach shall be empty except for the test equipment and test personnel, not to exceed four (4) persons. All openings shall be closed and all accessories shall be operating during the test. The coach shall accelerate at full throttle from a standstill to 35 mph on level commercial asphalt or concrete pavement in an area with no large reflecting surfaces within 50 feet of the coach path. During the test, the ambient noise level in the test area shall be at least 10 dB lower than the coach under test. Instrumentation and other general requirements shall conform to SAE Standard J366. If the noise contains an audible discrete frequency, a penalty of 5 dBA shall be added to the sound level measured.

5.2.6 ANCILLARY FEATURES

The following items shall be provided:

(1) A five-(5) pound class 2A-10BC dry chemical fire extinguisher with heavy duty bracket shall be provided and installed.

(2) A reflector kit which meets the requirements of the Pennsylvania Department of Transportation shall be provided and installed.

(3) A trash bag holder shall be provided and installed by the manufacturer. This holder will consist of two (2) single prong (clothes locker type) coat hooks mounted securely in the driver's area. A backing plate may be required if these hooks are mounted on fiberglass or similar material.

(4) A double (or two single) prong coat hook(s) shall be supplied and installed. Additionally, a black Velcro strip shall be located below the hook(s) to retain coat close to the side wall.

(5) A transfer cutter shall be provided. The Authority will have a sample transfer cutter available for review at the Pre-bid meeting. The transfer cutter installation must meet the approval of the Authority. Current transfer cutters are Port Authority Stock# 730286 and are available as Part# 6657/2 – Set from:

SBS Precision Sheet Metal
4324 Fortune Place
Melbourne, Florida 32904
Phone (407) 951-7411Fax: (407) 728-0847

(6) A pen/pencil and change/small item holder is to be provided and installed. A drawing will be provided from Port Authority.

(7) Three separate take-one boxes shall be provided. The first, a triple pocket style constructed from wire which is tack welded or braised shall be installed at the front of the coach on the vertical portion of the dash. A sample will be provided by Port Authority. The other two shall be double pocket clear plastic boxes by Acrylic Designs, Part# LHW-M131 or Approved Equal.

Location and installation of all ancillary features will be determined by Port Authority representative on the pilot bus.

5.2.6.1 DRIVER'S AREA

5.2.6.1.1 Dash Panels

To the extent practicable, areas that are visible from outside the coach in the vicinity of the dash panel and cowl shall be configured to preclude use for storage of items.

5.2.6.1.2 Sunscreen

Adjustable sun screens, shall be provided for the driver's side of the windshield and the driver's side window. Screens shall be configured with a 5 inch solid band 3 inches up from the bottom and shall be positioned to minimize light leakage between the screen and windshield pillars. Screens shall store up and out of the way. Screens shall not obstruct air flow from the climate control system or foul other equipment, such as the radio handset or the destination sign control. Deployment of the screens shall not restrict vision of the rearview mirrors. Screen adjustments shall be made easily by hand with positive locking and releasing devices. Sun screen construction and materials shall be strong enough to resist breakage during adjustments. Screens may be transparent, but shall not allow a visible light transmittance in excess of 10 percent. Screens, when deployed, shall be effective in the driver's field of view at angles more than 5° above the horizontal. Screens and installation of same shall have the approval of a Port Authority representative.

5.2.6.1.3 Exit Signal

A passenger chime signal and a "Stop Requested" lamp visible to the driver and to passengers anywhere inside the coach shall be provided. The signal system shall consist of pull cords that are convenient to seated passengers, standees, and passengers standing at the rear door. The cords shall be installed at the height of the horizontal divider between the lower fixed and upper transom passenger windows. Two vertical cords (one per coach side) shall be attached to the horizontal cord above the flip-up wheelchair position seats. These shall extend down and be secured below the windows. Specific location of all passenger cords shall be determined by Port Authority representatives on the pre-production coach. Additionally a push button to activate the stop request signal shall be installed in the rear door actuator compartment cover to enable passengers standing at the rear door to activate the stop request signal. A decal shall be provided to identify this switch. Standees shall be able to reach easily the chime signal located under the passenger interior lighting fixtures.
Activation of the passenger signal shall cause the chime to sound once, light the "Stop Requested" lamp and a stop request indicator on the driver's tell-tale lamp panel. Additional operation of the pull cords or stop request push-button shall not cause the chime to sound. When the front or rear doors open, the passenger signal shall reset and the stop requested lamp shall extinguish. The pull cords shall be wire cable covered with a protective vinyl cover, yellow in color. Pull cords shall be suitably supported at each window mullion to prevent sagging and be adequately spaced from the mullions to prevent chafing.

A passenger signal system shall be provided for each wheelchair position. These shall be touch tape type switches located under the wheelchair "flip-up" seats. The tape switches must be located in close proximity to the arm rest of a wheelchair when parked in the wheelchair position. Specific location of tape switches must have the approval of a Port Authority representative. In addition to activating the chime and "Stop Requested" sign, these switches shall light a wheelchair stop indicator light on the driver's tell-tale lamp panel.

5.2.6.2 MIRRORS

5.2.6.2.1 Outside Mirrors

The coach shall be equipped with a corrosion-resistant rearview mirror on each side of the coach. Both mirrors shall be independently adjustable. Both mirrors shall permit the driver to view the highway along both sides of the coach, including the rear wheels. Both mirrors shall be firmly attached to the coach to prevent vibration and loss of adjustment, but not so firmly attached that the coach or its structure is damaged when the mirror is struck in an accident. The right side rearview mirror shall be mounted so that its lower edge is no less than 80 inches above the street surface. Reflect decals shall be applied to the back side of the mirror. The left side rearview mirror shall be mounted so that its uppermost edge is no more than 80 inches from the street surface. Means shall be provided for safe adjustment of the exterior mirrors by persons ranging in size from the 95th percentile male to the 50th percentile female. Mirrors shall retract or fold sufficiently to allow coach washing operations. Mirrors shall not contact driver's window glass or front door glass when folded back. This shall be accomplished by mechanical stops. Curbside outside mirror shall be a B & R 6 x 14 inch or Approved Equal, with top flat remote and bottom convex remote control. Curbside mirror shall have a #200-3GG arm. A remote switch (on dash) shall be a Ramco ELE 310. A multi-pin weatherproof electrical socket shall be located in the coach body in close proximity to the curbside mirror bracket. A mating multi-pin weatherproof electrical plug shall be connected to the mirror wiring near the mirror bracket. The configuration of this plug/socket electrical connection shall be configured to allow easy replacement of the mirror if damaged or defective. A metal protective bracket, painted to match the mirror arm, shall be installed to prevent damage to mirror wiring caused by washrack brushes and/or tree branches. Roadside mirror shall be a B & R 6 x 14 inch or Approved Equal, top flat manually adjustable and bottom convex manually adjustable. Roadside mirror shall have a #238 arm. Mirror location and configuration shall be approved by Port Authority.

5.2.6.2.2 Inside Mirrors

Mirrors shall be provided for the driver to observe passengers throughout the coach without leaving his seat and without shoulder movement. With a full standee load, including standees in the vestibule, he/she shall be able to observe passengers in the front and rear stepwells, anywhere in the aisle, and in the rear seats. Inside mirrors shall consist of; a 4 x 16-inch flat mirror centered above the windshield, a flat round spot 6-inch mirror located between the right windshield and the front passenger doors, an 11-inch round convex mirror located above and just behind the rear passenger door, and a 7 x 10-inch rectangular convex mirror above the front door, and an 8-inch round convex, high-dome mirror located on or above the right A-post positioned to allow the operator to view the front of the coach. Inside mirrors shall not be in the line of sight of the right outside mirror. Mirror location shall be approved by Port Authority.

5.2.6.3 PASSENGER ASSISTS

5.2.6.3.1 General Requirements

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 5th percentile female standee. Starting from the entrance door, moving anywhere in the coach and out the exit door, a vertical assist shall be provided either as the vertical portion of seat back assist (see Section 5.2.3.2.3) or as a separate item, so that a 5th percentile female passenger may easily move from one assist to another using first one hand and then the other without losing support. Excluding those mounted on the seats and doors, the assists shall be 1¼ inches in diameter. Provisions should be made to provide handholds for children. This may be accomplished by the use of vertical stanchions or handholds built-in or attached to passenger seats. These shall be located within 24 inches of the floor. All passenger assists shall permit a full hand grip with no less than 1½ inches of knuckle clearance around the assist. *Refer to Figure 5.2.3.2.4-A "Seating Arrangement" for the general location of vertical stanchions.*

A crash resulting in a one (1) foot intrusion shall not produce sharp edges, loose rails, or other potentially dangerous conditions associated with a lack of structural integrity of the assist.

Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assist. All areas of the passenger assists that are handled by passengers including functional components used as passenger assists, shall be stainless steel. 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. Brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be flush with the surface and free of rough edges. Installation of all passenger assists must be approved by Port Authority. Stainless steel grab handles shall be provided and shall be located on the underside of the flip-up wheelchair seats, just forward of the wheelchair passenger stop request tape switches. A minimum of twenty (20) nylon passenger assist straps shall be supplied and installed on the horizontal stanchions. These are manufactured by Allegheny Cable Company, and are identified as part #BWG.S-8000, Port Authority Stock #79-1772[2]. Location of straps will be determined at the time of the pre-production bus construction.

5.2.6.3.2 Front Doorway

Front doors and entry area shall be fitted with assists no less than ¾ inch in width. Assists shall extend as far outward as practicable, but shall be no further than 6 inches from the outside edge of the lower step tread. They 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 on the front modesty panel.

5.2.6.3.3 Vestibule

The aisle side of the driver's barrier and the modesty panels shall be fitted with vertical passenger assists that are functionally continuous with the overhead 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 coach, 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 or the average step tread surface. The assists at the front of the coach shall be arranged to permit a 5th percentile female passenger to reach easily from the door assist, to the front assist, to vertical assists on the driver's barrier or front modesty panel.

A horizontal handrail (Crowd Bar) shall be provided to the right of the driver's position, 46½ inches above the floor. This rail shall be hinged at the driver's barrier and extend toward the dash at the center of the bus. A suitable heavy-duty latching mechanism shall be provided on a vertical stanchion approximately halfway to the dash. The latch must be designed so as to lock the handrail into the horizontal position during normal coach operation, yet permit easy egress for the operator during an emergency. Design and installation of this handrail must be approved by Port Authority.

5.2.6.3.4 Overhead

A continuous, full-grip overhead assist shall be provided, except in the front vestibule and at the rear door. This assist shall be convenient to standees anywhere in the coach and shall be located over the center of the aisle seating position of the transverse seats. The assist shall be between 70 inches to 74 inches above the floor. 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.

5.2.6.3.5 Longitudinal Seats

Longitudinal seats shall have vertical assists located at every other designated seating position. Forward facing seats shall have a vertical assist at the locations shown on Figure 5.2.3.2.4-A . 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.

5.2.6.3.6 Rear Doorway

Vertical assists that are functionally continuous with the overhead assist shall be provided at the rear door modesty panels. Rear doors, or the exit area, shall be fitted with assists no less than 3/4 inch in width which shall provide at least 1½ inches of knuckle clearance between the assists and their mounting. Assists shall be provided that are functionally continuous during the entire exiting process for a 5th percentile female, and the assists shall be no more than 6 inches from the outside edge of the lower step tread.

5.2.6.4 EXTERIOR ROUTE DISPLAYS

5.2.6.4.1 Destination Signs, General

Destination signs shall be included on the front, on the right side just forward of the rear door, on the interior at the first window behind the driver's barrier, and on the rear of the coach. Sign readings shall be selected by the driver and shall retain the setting during subsequent operations. The entire display area of all signs shall be clearly visible both in direct sunlight and at night.

An automatic electronic destination sign system, TwinVisions All LED "Smart" Sign System or Approved Equal, shall be furnished and installed in the bus by the manufacturer. The destination sign system shall consist of:[1]

- 16 Row by 160 Column Front Destination Sign
- 14 Row by 108 Column Side Destination Sign
- 16 Row by 48 Column Rear Destination Sign
- 14 Row by 108 Column Interior Destination Sign
- Operator's Console
- All Cables and Accessories

The system shall be microprocessor-based utilizing approved bi-directional serial communications, such as; S.A.E J1708 or IBIS, E.I.A. RS-485, between system components, and shall utilize error detection techniques within the communication protocol.

Independent Controller Boards shall be mounted in the front & side destination Sign. The system shall be capable of communicating with, and/or controlling additional information devices, such as interior information Signs, Voice Annunciation devices, farebox, etc.. 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 PCMCIA Card or USB "thumb drive" of not less than one (1) megabyte memory capacity but sized according to the message listing noted herein.

The system shall incorporate an auto blanking feature that will cause the entire display area to be blank within thirty (30) seconds of the vehicle master power switch being turned off.

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.

The system message programming software shall provide a means of adjusting the length of time the messages are displayed from one-tenth of a second to twenty-five seconds duration. The blanking time between messages shall also be adjustable from one-tenth of a second to twenty-five seconds. Each light or blanking time of each message shall be capable of having a different retention time.

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 internally protected against voltage transients and RFI interference to ensure proper operation in the local environment.

It shall be possible to clean each of the destination sign glazing and the inside of coach destination sign glass without the use of tools.

5.2.6.4.2 Operator's Console Unit (OCU)

The OCU Unit shall be used to view and update display messages. It shall be mounted within the headsign compartment. . 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.

If the J1708/J1939 interface is selected for the Destination Sign System, an auxiliary J1708/J1939 port shall be made available on the OCU so that auxiliary commands may be provided to the Destination Sign system from a source that conforms to the J1708 command structure. TwinVision does not provide wireless apparatus, but the TwinVision Destination Sign System has the capability of interfacing via the J1708/J1939 link with any such inputs, providing that the apparatus conforms with the appropriate signaling specifications.

5.2.6.4.3 Front Destination Sign

The front destination sign matrix display shall have no less than 16 rows by 160 columns, with a message display area of not less than 7.7 inches high by not less than 63 inches wide.

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 sign box shall inhibit entry of dirt, dust, water and insects during normal operation or cleaning with a cyclone cleaner. Access shall be provided to clean the inside of destination sign windows and to remove or replace the sign mechanism. The sign shall be visible in all ambient lighting conditions, both day and night. This shall be accomplished through the use of Light Emitting Diode (LED) lamps (one per dot) which will illuminate the sign for non-glare viewing.

Access panels and display boards shall be mounted for ease of maintenance/replacement, using self-retained, quarter-turn fasteners.

The vehicle manufacturer shall comply with the destination sign manufacturer's recommended mounting configuration and installation procedures to assure optimum visibility of the sign display.

5.2.6.4.4 Front Auxiliary Sign

A Front Auxiliary Run Number Sign shall be provided. The sign shall be a four (4) digit sign as manufacturered by Transign LLC or Approved Equal . The sign shall have a sturdy steel housing and a display area of 2.5 inches by 4.0 inches for each digit. The sign shall utilize a mylar curtain and be backlit with lifetime warranted LED lighting. Mounting of the sign shall incorporate a spring-loaded design for ease in setting display. The sign lighting shall be 24VDC.

The 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 vehicle manufacturer shall comply with the destination sign manufacturer's recommended mounting configuration and installation procedures to assure optimum visibility of the sign display.

The sign shall be located on the front curbside dash area of the bus, outside of the view through the swept portion of the windshield,

5.2.6.4.5 Side Destination Sign

The side destination sign matrix display shall have no less than 14 rows by 108 columns, with a message display area of not less than 4.2 inches high by not less than 42 inches wide.

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 sign box shall inhibit entry of dirt, dust, water and insects during normal operation or cleaning with a cyclone cleaner. Easy access shall be provided to clean the inside of the destination sign windows and to remove or replace the sign mechanism.

Display boards shall be mounted for ease of maintenance and/or replacement, using self-retained, quarter-turn fasteners.

The vehicle manufacturer shall comply with the destination sign manufacturer's recommended mounting configuration and installation procedures to assure optimum visibility of the sign display.

The sign shall be located in the first window position forward of the exit door. The side sign shall be easily read from the sidewalk level.

5.2.6.4.6 Interior Destination Sign

The side destination sign matrix display shall have no less than 14 rows by 108 columns, with a message display area of not less than 4.2 inches high by not less than 42 inches wide.

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 sign box shall inhibit entry of dirt, dust, water and insects during normal operation or cleaning with a cyclone cleaner. Easy access shall be provided to clean the inside of destination sign windows. Sign must tilt down on side brackets for access to rear in order to repair or replace lamp or mechanism.

Display boards shall be mounted for ease of maintenance and/or replacement, using self-retained, quarter-turn fasteners.

The sign shall be located in the first street side window position rearward of the driver's barrier.

5.2.6.4.7 Rear Destination Sign

The rear sign matrix display shall have 16 rows by 48 columns, with a message display area of not less than 6.1 inches high by not less than 18 inches wide. The sign box shall inhibit entry of dirt, dust, water and insects during normal operation or cleaning with a cyclone cleaner. The destination sign shall be hinged at the top and fitted with quick release fasteners in order to clean the inside of destination sign windows and to remove or replace the sign mechanism.

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 Rear Sign shall display a "Wheelchair" symbol whenever the W/C ramp is in use or enabled.

Display boards shall be mounted for ease of maintenance and/or replacement, using self-retained, quarter-turn fasteners.

The vehicle manufacturer shall comply with the destination sign manufacturer's recommended mounting configuration and installation procedures to assure optimum visibility of the sign display.

The sign shall be located on the rear of the bus above the engine door and either centered or to the curb side. The sign shall not protrude from the coach surface more than 3 inches.

5.2.6.4.8 Memory Message Transfer and Update

The Sign system shall be programmable on the Bus vehicle with the use of a thumb drive type device or PCMCIA Card. A programming card 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. Programming of all signs in the system shall be accomplished through a single programming port. Memory devices or PCMCIA Cards, of appropriate memory capacity based on requirements of the message listing noted below (but not less than 0.5 Megabyte) shall be supplied at the rate of one card for each 50 systems, or fraction thereof, but in any event not less than two such devices shall be supplied.

5.2.6.4.9 Programming Equipment

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

The programming software package shall use the capacity of computer equipment as recommended and approved by the sign manufacturer and at a minimum shall be an IBM 486 or higher PC/AT, having not less than 16 megabyte of RAM, to allow the Sign Programming Cards to be programmed directly from the PC through an appropriate port.

The program shall be designed for ease of deleting and adding messages to a destination Sign list in a WINDOWS® XP or NT 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 custom message writing by selection of preprogrammed standard variable width fonts. This allows for creation of a custom font 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.

A list of Port Authority's destination sign readings will be supplied to the manufacturer to allow the signs to be pre-programmed with the correct readings.

5.2.6.4.10 Stop Announcement System

A Clever Devices Intelligent Vehicle Network™ (IVN-III™) or Approved Equal shall be provided and installed. The IVN-III™ shall be comprised of three components: a system controller, an operator interface unit, and an interior twenty (20) character LED sign. The IVN-III™ shall provide Automatic Passenger Information System functionality including the capability to provide automatic interior and exterior announcements and automatically display text messages on an interior sign as required by the Americans with Disabilities Act. The system shall play an accurate representation of human voice without the evidence of distortion or noise inside and outside the vehicle. The system shall provide for a microphone input for driver initiated announcements both inside and outside the vehicle. The IVN-III™ must automatically adjust the audio output level for ambient noise levels both inside and outside the vehicle. The operator interface must be a fully graphical control head with 12 keys (six above and six below screen) with each key programmable with soft labels. The control head, inside sign and destination sign must be supported via single J1708 or J1939 port from the system controller.

For ease of updates, all audio data, route topography database and application software must be stored on the Intelligent Vehicle Network controller and not segmented over multiple components.

If a system other than Clever Devices or a system with 100% demonstrated compatibility with Clever Devices is proposed, the provider of the system shall:

1) Collect all of the necessary data including route topography, audio recordings and sign text to compile a database used for automatic operation of the system. The system hardware and database must be demonstrated to and approved by the Authority for performance and accuracy.

2) Include one license copy of a Clever Devices Bus Tools™ equivalent database management system, which will provide the ability to manage and edit all IVN™ data in one integrated software program. Segmented software programs for route and audio data will not be accepted. The BusWare™ and BusTools™ equivalent system must have the capability to manage additional data for other on-board intelligent systems. The IVN™ shall utilize the Clever Devices BusWare™ application software package for system controls and event triggering.

The IVN architecture must include a defined method for integrating to other intelligent systems. These intelligent systems include at a minimum, the vehicle multiplex system, destination sign system and fare collection devices. The IVN must have a demonstrated interface to a wireless communications system and a demonstrated ability to provide Automatic Vehicle Monitoring functionality with input from J1708/J1587/J1939, multiplex systems, and discrete I/O.

The system shall provide for integration with other intelligent systems on the vehicle through J1708 / J1587/J1939 data communication protocol and data definition. The system shall be supplied with wireless communication capabilities to communicate with off-board devices. Automatic Vehicle Monitoring shall be provided using the IVN system. The system integration and communication scheme must have the approval of the Authority.

The system shall incorporate Automated Passenger Counters (APC) covering all vehicle doors. The APC system data shall be integrated to the Route and Stop information from the IVN system.

The acceptance test procedures for the system shall be based upon the manufacturer's published procedures. These procedures must be approved by the authority.

The system may utilize only the internal and external speakers from the public address system. All other components necessary for the operation of the stop announcement system must be supplied separately.

Location and installation must have the approval of the Authority.

5.2.6.5 FARE COLLECTION

As far forward as is practicable, the contractor shall make provisions for a Scheidt & Bachmann Electronic farebox. Location of the farebox shall not restrict traffic in the vestibule and shall allow the driver easily to reach the Operator control unit and coin drop buttons to view the displays. The farebox shall not restrict operation of driver controls. Farebox location shall permit accessibility to the vault for easy manual removal. A 10-amp, 24-volt, DC, protected circuit shall be utilized to power the farebox. The power lead shall be a Belden #8718 with a plug connector matching the receptacle on the farebox. A ground strap shall be provided and installed. It shall be attached to a metal frame member and be available next to the power lead.
Proper cabling shall be provided to allow for the connectivity of the farebox to the Clever Devices IVN III unit. The floor under the farebox shall be reinforced to provide a sturdy mounting platform and to prevent shaking of the farebox. Manufacturer shall supply farebox mounting hardware to include a stainless steel mounting base with four (4) $^{3}/_{4}$ x 16 x 2½-inch stainless steel all thread bolts, washers, and stainless or chrome plated acorn nuts. A $^{3}/_{16}$ x 18 x 2-inch stainless steel all thread bolt shall be provided as a ground stud. A sample of this base will be provided to the successful bidder by the Authority. A stainless steel mounting riser base, if required, shall be provided by the Contractor. This base will be required if the driver's platform is more than 4 inches above the floor to which the farebox is mounted. A stanchion is required for the attachment of the transfer cutter. The specific location for this stanchion will be determined after award of the contract.

5.2.6.6 BICYCLE RACKS

The Contractor shall supply and install a front-bumper mounted Sportworks DL-2, or Approved Equal, 2 position bicycle rack. The bike rack shall be of anti-glare stainless steel construction. The bicycle rack mount shall provide a positive latch in both the open (down) and closed (up) positions.

5.2.6.7 WHEELCHAIR LOADING DEVICE

5.2.6.7.1 Accommodations

A Lift-U wheelchair ramp or Approved Equal shall be provided and installed at the front door of the coach. The Ramp shall meet all ADA regulations. All associated equipment necessary to make the ramp system functional shall be provided. The ramp shall be electrically and/or hydraulically operated, located completely within the coach and not be subject to road damage.

5.2.6.7.2 Loading System

Brake and accelerator interlocks shall be provided when the wheelchair loading system switch is activated. This shall be accomplished by not allowing power to the wheelchair loading system until the parking brake is set and the transmission is placed in neutral. The bus engine shall not shut down when the loading system is in operation.

The Hazard (or 4 way) warning lights shall be activated when the wheelchair loading system switch is activated.

The ramp shall be in two sections which are hinged together. The ramp shall be constructed of stainless steel. The underside of the deployed ramp shall be covered with flooring material matching the color of the aisle, to serve as the entrance area when in the stowed position. This flooring material shall be secured to the ramp along its perimeter with stainless steel strips to prevent the edges from lifting due to water intrusion and passenger traffic. The surface of the deployed ramp shall be covered with a permanent non-slip coating. The ramp, in the extended position shall support a total load of 600 pounds.

The driver's controls shall consist of a wheelchair power switch and wheelchair ramp-operating switch. The operating switch shall be momentary and shall have positions designated as "Deploy" and "Stow".

The ramp shall be capable of being easily deployed manually in the event of an electrical or hydraulic system failure. The method used for manual deployment of the ramp shall be approved by Port Authority

5.2.6.7.3 Wheelchair Accommodations

The coach shall be equipped with two wheelchair parking positions. Two (2) longitudinal flip-up seats shall be located as close to the loading system as is practical. Tiedowns for a passenger in a wheelchair shall be provided as per the ADA requirements. The exit signal shall be no higher than 4 feet above the floor in this area. Maneuvering room inside the coach shall accommodate easy travel for a passenger in a wheelchair, and no width dimension shall be less than 34 inches. Areas requiring 90° turns of wheelchairs shall have a clearance arc dimension no less than 45 inches, with a vertical clearance of 12 inches above the floor surface. In the parking area where 180° turns are expected, space shall be clear in a full 60-inch diameter circle. Lights shall be provided above the doorway equipped with the wheelchair loading system to floodlight the loading area.

5.2.6.7.4 Wheelchair Maintenance Special Tools

Wheelchair loading system special tools (if utilized) shall be provided and delivered with the coaches. The quantity to be supplied shall be ten percent (10%) of the total coaches delivered rounded up to the next highest whole number with a minimum of seven sets.

5.2.6.8 VIDEO SURVEILLANCE SYSTEM

The vehicle shall be equipped with a March Networks 5308 or Approved Equal video surveillance system of the latest available model at the time of production. This system shall provide on-board monitoring of the entire interior of the vehicle. The system shall also digitally record and store video information for up to 250 hours.

The system shall have the capability to manage and retrieve video and system health data through a IEEE 802.11x wireless interface. If a Video Surveillance System other March Networks is provided, all 'backoffice' or enterprise software required to allow individual and fleet health monitoring and management shall be provided.

When the vehicle is started, the digital recorder acquires data from cameras and pre-selected sensor parameters. If the vehicle is externally impacted, as in the case of collision with another vehicle or collision with a moving or stationary object, a system shut-down will be automatically triggered to protect data captured before, during and for a pre-set time (e.g., 5-10 minutes) after the "event." On a routine basis, recording will stop following a pre-programmed period when the vehicle ignition is off and the system stands idle.

During recording, time, date and vehicle identification number, will be digitally inserted, in real-time, into each video image set. Each image set consists of at least one and up to four (expandable to eight) separate but concurrent video images. All information is stored on removable shock-resistant disk storage media and is digitally encrypted for authentication purposes and to prevent alteration or tampering. As available disk space is filled, new information overwrites old in a linear sequence. The sequence will continue indefinitely unless or until an "event" occurs necessitating retrieval of stored data.

5.2.6.8.1 Video Cameras

General. Each vehicle can be equipped with six (6) video cameras. The video cameras shall be color and utilize an Interline Transfer Charge Coupled Device (CCD) for imaging. . The cameras shall be selected to provide reliability within the operating environment of a Port Authority transit coach. The cameras shall be equipped with lenses to produce the required view. Camera location, mounting and field of view require Port Authority approval.

Power. The video cameras shall operate on 12V DC and consume less than 4 watts of power during operation. All cables and connectors to and from cameras shall conform to SAE Standards. Camera power consumption shall be monitored by the MDVR system.

Illumination. The video cameras shall provide useable picture at .05fc scene illumination with an F1.4 lens.

Resolution. The video cameras provide a minimum 500 or better lines of horizontal resolution.

5.2.6.8.2 Camera Views

The camera mounting shall be located and configured to provide the following views;

1. Front Door - Mounted above and slightly behind the Operator's left shoulder, this camera shall capture a view that includes the front door and the top of the farebox.
2. Rear Door – Mounted under the lighting panels on the right side of the bus, opposite the rear door, this camera shall capture a view centered on the rear door, showing the entire door, with the top of view slightly above the top of the door.
3. Front-To-Rear – Mounted under the front destination sign compartment, this camera shall capture a view centered on the passenger aisle with the top of the view at ceiling level.
4. Rear Deck – Mounted forward of the rear door and facing rearward, this camera shall capture a view centered on the rear aisle with the top of the view at ceiling height.
5. Forward Looking – Mounted within the left side of the front destination sign compartment, facing forward, this camera shall capture a view out the front of the vehicle with the bottom of the view able to see a 24" high object, placed at street level, 5 ft in front of the front bumper.
6. Curbside – Mounted above and forward of the front door and facing rearward, this camera shall capture a view that includes the rear wheels of the coach and the curbside of the coach as far forward as possible.

Final camera view and positioning require Port Authority approval

5.2.6.8.3 Camera Housings

Camera enclosures should be of a size and mounting so as to not obstruct passenger flow while providing sufficient protection to the cameras.

5.2.6.8.4 Signage

General: There shall be four (4) signs per vehicle in approved locations.

Specifications:

Size:	3" x 8"
Material:	1/16" plastic
Coloring:	Red background, white lettering
Lettering Size:	7/16"
Wording:	"For Your Safety and Security Continuous Video Monitoring on This Vehicle."

5.2.6.8.5 Mobile Digital Video Recorder (MDVR)

General. The digital video/audio and sensor recording device shall be of a March Networks 5308 type system or equivalent. The MDVR shall be capable of recording up to eight (8) simultaneous and continuous grayscale or color camera inputs, as well as up to ten (10) pre-selected sensor channels including one track digital audio. Inputs are switched with an internal multiplexing system.

Power. The MDVR operates on 12 or 24 volt DC power. All cables and connectors to and from the MDVR shall conform to SAE Suggested Standards.

Troubleshooting and Maintenance. The MDVR shall have a serial port to allow external programming and system diagnostics. Built-in software shall perform full and continuous system diagnostics and be capable of reporting failures to the sub-system component level.

Clock. The MDVR clock shall operate independently of the main power supply and shall have at least five (5) year operational lifetime before battery change is required. Clock drift shall be no greater than five (5) minutes per six (6) months. Dates shall be pre-programmed to the year 2030 and 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.

Operator Interface. The MDVR shall require no vehicle operator interface effectuate operation, initiate a shut-down, maintain the system, service the system or prepare the system for operation.

Maintenance. The MDVR shall require no more than one (1) total hours of maintenance per year. Regular maintenance procedures shall be such that transit property maintenance personnel can routinely perform them.

Process Control. The MDVR shall be controlled using PC compatible processors in an embedded form factor.

Data Acquisition and Processing. The MDVR shall be capable of directly digitizing, combining, compressing, encrypting and storing NTSC or PAL video, audio sensors and auxiliary sensor signals. Video, audio sensor and sensor signals shall be digitally encrypted using a Public Key/Private Key Cryptography (PKC) standard with dual level security to detect and guard against tampering. Compressed, encrypted data shall be stored to removable disk storage media.

SAE Conformance. The MDVR shall be capable of communication utilizing "Electronic Data Interchange Between Microcomputer Systems and Heavy-Duty Vehicle Applications" standards (i.e., J-1708, J-1587 and J-1939). The DRD shall be 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 J-1455 "Recommended Environmental Practices for Electrical Equipment Design" for vibration and shock isolation. The MDVR shall be capable of withstanding shock pulses of up to 100 G-forces operating and 200 G-forces non-operating.

The electrical standard will be in place and be accessible to an installed ECM if output is available from manufacturer's ECM.

Sensor Parameters. In addition to accurate time and date, the DRD shall be capable of acquiring, processing and appending with image data, up to ten (10) variable vehicle parameters according to optional pre-selection:

- audio
- speed
- heading
- throttle potion
- brake operation
- door actuation
- location
- ignition switch position
- left and right directionals
- g-force profile

Appending (or combining) of variable vehicle parameters shall occur in the same data stream as time and date and vehicle identification number.

Other Specifications:

Power Source:	10-40 volts DC @ 2 amps max.
Dimensions:	13-1/2" L x 14-1/2" W x 5-1/2" D on rack mount
Weight:	13 lbs. with drive
*Operating Temp:	-40°F to 177°F (-40°C to 79°C)
*Humidity:	to 95% non-condensing
Clock Battery Life:	5 years minimum
Camera Inputs:	Four (4) NTSC or PAL composite 1V PP signals.
Recording System:	All digital encoding adjustable grayscale or color. Proprietary adjustable compression algorithm.
*Storage Media:	Ruggedized, removable disk drive subsystem. Survivability up to 100g (operating).
Monitor Output:	Up to two (2) NTSC monitor outputs via RS-170 interface. Minimum 24 hours. Variable video and audio storage time based on disk size, number of cameras, resolution, frame rate, and amount of sensor data.
Picture Format:	Adjustable per application. Maximum of 720 x 525.
Frame Rate:	Adjustable up to an aggregate 16 frames per second (fps), or 4 fps per camera.
Time Presentation:	12 or 24 hour format. Stored as universal time. Month/Date/Year storage. Time and date inserted into image at time of capture.
Sensor System Records:	Records following optional information: Audio* Speed Brake pressure, 0-100 psi in brake line (air) Throttle position**, 0-100% from 0-5 VDC sensor Left and right directionals GPS positioning receiver module Ignition switch position (standard) Door actuation Heading (in degrees) Acceleration/Deceleration (G-force)
Optional Additional Inputs:	Serial port for wireless transmission Short-range wireless diagnostic reporting system External remote LCD panel and operating interface

5.2.6.8.6 Removable Drive Canister - Disk Storage Media

General. The removable disk media shall conform to mobile requirements for reliability and durability and conform to standards established by the SAE. The removable drive canister shall be in a ruggedized shock-resistant form factor. The canister protects the media and is capable of withstanding shock pulses up to 100 G-forces during operation and up to 200 G-forces when idle, without system failure. Independent data should be supplied supporting these requirements.

Storage Capacity. Total storage capacity shall be a minimum of 250 hours. Disk capacity may vary depending on compression method utilized.

Upgradeability. As technology and the industry progress larger capacity storage drives may become available. Disk capacity/storage time shall be field upgradeable with nominal changes to software and/or hardware.

Survivability and Shock Resistance. The disk media shall be capable of withstanding continuous vibration and frequent shock pulses or moderate duration. Recorded data will survive all typical traffic accidents as well as high speed collisions up to 100 G's. (Documentation of survivability must be supplied.)

Portability. Disk storage media must be removable and conveniently portable.

Playback and Long-term Storage. Recorded data shall be viewable in read-only format on a standard PC work station (Pentium or better). Software supplied for on-site data playback and should be compatible with standard PC-based operating systems such as Windows™ in both 16 bit and 32 bit versions. Data shall be easily downloaded for long-term storage to high capacity DAT tapes or any other chosen high capacity storage medium.

Tamperproof. All recorded data shall be digitally encrypted using a dual level public key/private key cryptography (PKC) standard. Decoding and transfer shall be available within 48 hours of request.

5.2.6.8.7 Field Use and Testing

The total system shall have a minimum of two (2) years of actual documented field use in a mass transit environment. A qualified environment shall be a mass transit property recognized in the American Public Transit Association (APTA) Membership Directory. Documentation logs shall be available for inspection.

5.2.6.8.8 Service

Telephone troubleshooting service shall be available during normal business hours Monday through Friday and on weekends and holidays. For system failures which are not user or site serviceable, field swap service shall be available within 48 hours.

5.2.6.8.9 Training

Training will be provided to transit property personnel in maintenance, engineering, control room and supervisory staff. Training shall include maintenance procedures, installation/de-installation procedures, disk retrieval, playback and data transfer.

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5.3.1 PROPULSION SYSTEM

5.3.1.1 VEHICLE PERFORMANCE

5.3.1.1.1 Power Requirements

Propulsion system and drive train shall provide power to enable the coach to meet the defined acceleration, top speed, and gradability requirements. Port Authority shall have the right to determine final drive components and ratios which will provide the proper performance characteristics for Port Authority's operating environment. Sufficient excess power shall be available to operate all accessories.

5.3.1.1.2 Top Speed

The coach shall be capable of a top speed of at least 65 mph on a straight, level road at SLW with all accessories operating. Road speed shall be limited to 65 mph through the electronic engine controls.

5.3.1.1.3 Gradability

Gradability requirement shall be met on grades with a surface friction co-efficient of 0.3 and above at SLW with all accessories operating. Power plant shall enable the coach to maintain a speed of 44 mph on a 2-½ percent grade and 7 mph on a 16 percent grade.

5.3.1.1.4 Acceleration

An average acceleration rate of at least 0.06g shall be achieved at SLW between 0 and 15 mph. Acceleration measurement shall commence when the accelerator is depressed. The minimum acceleration rates are shown on the graph entitled "Transit Coach Minimum Acceleration Rates".

5.3.1.1.5 Jerk

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

5.3.1.1.6 Operating Range

The operating range of the coach, run on the design operating profile, shall be at least 350 miles on a fill-up of fuel.

5.3.1.2 POWERPLANT MOUNTING AND ACCESSORIES

5.3.1.2.1 Mounting

The power plant shall be mounted in a compartment in the rear of the coach. All power plant mounting shall be mechanically isolated to minimize transfer of vibration to the body structure. The compartment shall be insulated and soundproofed to minimize the transmittance of engine noise and to provide for fire protection. The power plant shall be suitably protected by skid plates welded to the coach frame or bolted to the engine cradle to prevent damage to the engine or transmission sumps from contact with road surfaces.

5.3.1.2.2 Service

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 3M Mechanics shall be able to remove, replace, and prepare the engine and transmission assembly for service in less than 20 total combined man-hours. Removal of the engine and/or transmission units shall not require removal of the A/C compressor or any A/C freon line which in turn would necessitate expelling the A/C freon charge. 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. A locking type air intake restriction gauge shall be provided. In addition, an electronic monitor shall activate the check engine light indicating that intake air has been restricted to the point that it will affect engine performance. These gauges shall be easily read during service and mounted in an area where they shall not be damaged during minor or major repairs. Five (5) sealed type service lights, the same type as the LED reverse lights shall be provided in the engine compartment.

Engine and transmission oil and 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. The checking of engine oil and transmission oil levels shall be accomplished by opening the engine compartment door. All lubricant sumps and reservoirs shall be fitted with magnetic type, external, hex head, drain plugs of a standard size. The engine shall be equipped with ESOC oil change fittings, consisting of a filter inlet and a drain connection. Fittings shall be of the quick connect no-spill type compatible with the ESOC Oil Exchanger.

The engine shall be equipped with a Davco Pro 384 24VDC heated or Approved Equal primary fuel filter and a recommended O. E. M. secondary fuel filter. The engine and transmission shall be equipped with heavy duty oil filters for efficient operation and to protect the engine and transmission between scheduled filter changes. All filters shall be easily accessible and the filter bases shall be plumbed to assure correct reinstallation. Fuel and oil lines within the engine compartment shall be rigidly supported and shall be composed of stainless steel tubing except in locations where the flexible lines are specifically required. Flexible fluid lines shall be kept at a minimum. They 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 Aeroquip "300" hose except in applications where premium pressure hoses are required, and shall have standard SAE or JIC brass or steel, reusable swivel end fittings. Swivel end fittings for line sizes 4, 5, 6, and 8 shall be SAE 45 degrees. Swivel end fittings for line sizes 10 and above shall be JIC 37 degrees. If manufacturer uses hoses or fittings other than the specified, all tooling necessary to repair and replace shall be provided. Hoses shall be individually supported and shall not touch one another or any part of the coach. The engine shall be equipped with a fuel or a check valve fitted in the fuel suction line to aid restarting after fuel filter changes.

5.3.1.2.3 Accessories

Engine-driven accessories shall be unit mounted for quick removal and repair. Accessory drive systems shall operate without failure or unscheduled adjustment for 50,000 miles on the design operating profile and shall not include any drive belts except for the air conditioning compressor and 24 volt alternator. Suitable guarding shall be provided to prevent personal injury from drive belts where used. These accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of idle operation and low route speed portions of the design operating profile.

5.3.1.2.4 Hydraulic Drive

Any accessory may be driven hydraulically. 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. Hydraulic oil shall be manufacturers approved synthetic fluid. Sensors in the hydraulic system, excluding those in the power steering system, shall detect and indicate on the driver's diagnostic panel conditions of low hydraulic fluid level. 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 in order to monitor system operation. All lines shall be compatible with the hydraulic fluid and maximum pressures of the system. Flexible lines shall be minimized in quantity and length. Lines of the same size and with the same fittings as those on other piping systems of the coach (but not interchangeable) shall be tagged or marked for use on the hydraulic system only. Hydraulic lines shall be individually and rigidly supported to prevent chafing damage, fatigue failures, and tension strain on the lines and fittings. The hydraulic system shall be configured and/or shielded so that a failure of any flexible line shall not allow hydraulic fluid to spray or drain onto any component operable above the auto-ignition temperature of the fluid. All elements of the hydraulic system shall meet the noise limits defined in these Technical Specifications. A priority system shall prevent the loss of power steering during operation of the coach if other devices are also powered by the hydraulic system. If coach is equipped with a wheelchair ramp it shall have its own hydraulic system completely separate from the engine hydraulic system. Hydraulic fluid is to be filtered, cooled to maintain 185 degrees maximum at 125 degrees ambient temperature, and have a bypass system to allow accessories to operate if filter is plugged. Hydraulic pumps shall be of the rebuildable type.

5.3.1.2.5 Secondary Oil Filter

The engine shall be equipped with an oil cleaning centrifuge filter specifically designed for transit service. A Model #976 Spinner II engine oil filter (or Approved Equal) shall be provided as approved by the engine manufacturer. Installation shall be approved by Port Authority.

5.3.1.3 POWERPLANT

5.3.1.3.1 Engine

The coach shall be powered by a Cummins ISL Diesel Engine rated at 280 hp programmed to operate on # 2 ULS diesel fuel with up to a 20% mix of BioDiesel. The engine shall be electronically controlled.
The engine shall operate for 300,000 miles on the design operating profile without major failure or significant deterioration.

Engine diagnostic equipment, including diagnostic software and laptop interface software/hardware shall be provided. The quantity to be supplied shall be ten percent (10%) of the total coaches delivered rounded up to the next highest whole number with a minimum of seven sets. These shall be supplied as part of this contract in order to facilitate troubleshooting of the engine. The receptacle for the diagnostic reader shall be located in the compartment above the driver's window. This shall be the 9 pin round type receptacle separate and distinct from the transmission reader receptacle.

The engine shall be configured with a five (5) minute idle shutdown system. The shutdown system shall be activated whenever the parking brake is set.

The engine shall stop when the master battery switches are placed in the "off" position.

The engine shall be equipped with a fast idle device which is driver-controlled and shall activate only with the parking brake applied and the transmission in neutral. This device may be used to help meet the requirements of coach cool-down in Section 5.3.7. The engine starter shall be protected by an interlock that prevents its engagement when the engine is running. Also, the starter shall not activate unless the engine is ready to start as determined by the engine control system.

Engine starter shall be warranted for a period of three years.

Air supplied to the engine shall be processed through a Donaldson Air Cleaner and Filter Part Number 13140044 Element Number P181015 or Approved Equal. Metal air inlet piping shall be 12 gauge, minimum thickness.

The engine shall be equipped with an oil level dipstick that allows checking of oil level with engine running and with engine stopped.

Engine installation including all piping and supports shall have the approval of the Authority Engineer.

5.3.1.3.2 Cooling System

Unless otherwise approved, the jacket water radiator, charge air cooler, and oil cooler must be a side-by-side configuration or separate independently mounted core matrixes. Under no conditions are any of the cores to be stacked in front of the other.

Engine jacket water radiators must be sized so as to maintain a 210 degree Fahrenheit radiator top tank temperature at an outside ambient of 125 degrees Fahrenheit with a 10% fouling factor utilizing a 50-50 mixture of ethylene glycol and water without the use of alternate engine control devices (AECD). This criteria must be met at maximum continuous rated engine horsepower and maximum torque with full transmission torque converter at 80% converter efficiency.

Anti-Freeze shall be fully formulated in accordance with the engine manufacturers recommendations.

Engine jacket water radiator must also be seized to meet retarder heat load at an outside ambient of 125 degrees Fahrenheit. Retarder heat load will be calculated by taking the average heat load and engine rpm created by the retarder from a 55 mph to zero mph stop within 20 seconds, or less, utilizing the retarder only on a level surface. One hundred (100) 0 to 55 mph to 0 continuous stop and go cycles must be performed utilizing the retarder only for deceleration in accordance with the preceding criteria to verify compliance with this specification.

Hydraulic pump, fan, and oil cooler must utilize manufacturers approved synthetic fluid that meets the requirements of the hydraulic system manufacturer. The system shall maintain a maximum oil temperature of 185 degrees Fahrenheit at 125 degrees Fahrenheit outside ambient temperature at maximum hydraulic system output. Hydraulic pumps and motors shall use Viton seals or Approved Equal and pressure will be limited to ensure maintenance free operation for a five year period.

Temperature of operating fluids on the coach shall be controlled by a cooling system(s). The cooling system shall be sized to maintain fluids at safe, continuous operating temperatures during the most severe operations possible with the coach loaded to GVWR and with ambient temperatures up to 125° F. The engine shall be cooled by a water-based, pressure-type, cooling system that does not permit boiling or coolant loss during the operations described above. Engine thermostats shall be easily accessible for replacement. Valves shall permit complete shutoff of both lines for the heating and defroster units. All valves in water system shall be ¼ turn lever-type, not gate valves. 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. The engine cooling systems shall be equipped with a Need Release disposable spin-on coolant filter or Approved Equal. Shut off valves shall allow filter replacement without coolant loss.
A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening one of the engine compartment access doors. A spring-loaded, all brass, push-button type valve to release pressure or vacuum safely in the cooling system

shall be provided. Both the valve and the water filler shall be no more than 60 inches above the ground. Both shall be accessible through the same access door. It shall not be possible to leave the pressure relief valve in the open position unattended.

The radiator shall be manufactured to the following specifications. The engine jacket water radiator core section must have a hydrogen brazed or mechanically bonded flat to round tube to header joint and be of plate fin construction. Tubes must be of red brass with a minimum of 0.012 inch wall thickness and fins of 0.0035 inch 3/4 hard copper with both front and back leading edges hemmed to 0.007 inch. Fin density may not exceed a maximum of 10 fins per inch, and fins must be a flat dimpled (or bumped) type design. Headers must be a minimum of 3/8 inch thick boiler plate steel with either bolted or welded tank construction. Radiators of welded tank construction are only acceptable with a 12 year warranty.

Charge air cooler may be of hydrogen brazed or mechanically bonded construction with a maximum fin density of 10 non-louvered fins per inch. Fin material is to be 0.0035 inch thick ¾ hard copper hemmed (both sides) to 0.007 inch.

Necessary hoses shall be premium, silicone rubber type that are impervious to all coach fluids. Hoses shall be secured with Breeze LTT, constant torque silicone-type clamps in all positions. The total fan horsepower draw for the cooling system including radiator, charge air cooler, oil cooler shall not exceed 10% of maximum rated engine horsepower. Fan blade tip speed may not exceed 14,000 feet/minute. Fans may not be driven continuously. Fan must be controlled by the engine computer. Radiator shutters shall not be used. The radiator shall be mounted to minimize air recirculation (short cycling). No heat producing components or climate control system component shall be mounted between the engine cooling air intake aperture and the radiator.

Radiator and CAC cooling package shall be cooled through the use of electrically driven fans utilizing brushless, variable speed, reversible motors. Fans shall be electronically controlled to match cooling package performance with vehicle needs. The fan system shall be configured to run in reverse mode for radiator and CAC cleaning purposes, activated by a protected toggle switch located in the rear run box. The vehicle alternator (Ref 5.3.6.6.7) shall be capable of supplying the electrical loads of the fan system and all bus electrical loads simultaneously. The fan system shall incorporate onboard diagnostics for system health monitoring and fault reporting through the vehicle J1939 network. Maintenance diagnostic and programming siftware shall be provided in the quantities listed in Section 5.7.3.

Prior to the initial engine coolant system fill, the coach manufacturer shall pressure test all components of the cooling system to assure that leaks are not present.

Coach manufacturer shall test the radiator and other cooling system components to insure that they meet the requirements of the engine manufacturer and Port Authority. Engine manufacturer and Port Authority must be present during the test. The Authority shall give final approval for the complete cooling system.

5.3.1.3.3 Transmission

The transmission shall be an Voith D864.5E or Approved Equal multiple-speed automatic shift with torque converter and the highest capacity hydraulic retarder available from the manufacturer. The retarder shall be the maximum available. A 3M mechanic with optional assistance shall be able to remove and replace the transmission assembly for service in less than twelve (12) total combined man-hours. The transmission supplied shall be of the electronically controlled type or Approved Equal. The coach shall be equipped with built-in transmission diagnostic test features. Diagnostic test equipment, including diagnostic software and laptop interface software/hardware shall be supplied as a part of this contract in order to facilitate the troubleshooting of the new transmission. The quantity to be supplied shall be ten percent (10%) of the total coaches delivered rounded up to the next highest whole number with a minimum of seven (7) sets. The receptacle for the diagnostic reader shall be located in the compartment above the driver's window. This shall be the 9 pin round type receptacle separate and distinct from the engine reader receptacle.

The transmission, including, but not limited to all electronic controls, shall operate for 300,000 miles on the design operating profile without major failure or significant deterioration. The transmission shall be equipped with an integral hydraulic retarder.

The contractor shall recommend and provide up-shift and down-shift speeds at typical power ranges normally encountered in Port Authority's service area. A magnetic type drain plug shall be furnished. The transmission oil cooler shall be constructed to permit complete disassembly for cleaning. A hydraulic oil overheat/fluid level sensor shall be provided when transmission fluid exceeds permissible operating temperature or goes above or below permissible fluid levels.

The heat exchanger shall be of maximum size providing the most amount of cooling for the transmission, including hydraulic retarder.

The retarder shall have three stage application and be activated in the following configuration. The first stage (33-1/3 % retardation) shall be activated when the accelerator is released. The second stage (33-1/3 % retardation) shall be activated by application of the first microswitch on the brake pedal. The third stage (33-1/3 % retardation) shall be activated by the third microswitch on the brake pedal.

Transmission dipstick tube is to be supplied with a "maintenance only" plug. Transmission dipstick is to be supplied separately, one per coach. The transmission shall be equipped with an electronic fluid level sensing device to allow for checking of the transmission fluid level without requiring the use of a dipstick..

Transmission holding fixtures (Kent Moore #J35926) shall be supplied to facilitate transmission overhaul. The quantity to be supplied shall be ten percent (10%) of the total coaches delivered rounded up to the next highest whole number.

One (1) 53-K –1066 Voith D864.5 Transmission Adapter Kit including all adapters and hardware required to mount and connect the Model D864.5 series transmission to Port Authority's Hicklin transmission dynamometer for test stands with power indexing.

5.3.1.3.4 Drive Shaft

The drive shaft shall be a 3½-inch diameter, heavy duty Spicer "Glide Coat" 1710 Series, or Approved Equal, with needle-bearing universal joints between the transmission and axle. The drive shaft shall have a flange at both ends. The shaft shall be guarded to prevent contact with coach or ground to prevent injury to passengers in case of breakage. A slip joint is to be included for compensation of vertical movement of rear axle. Provisions shall be incorporated to provide routine lubrication to all bearings and slip joints.

5.3.1.4 EMISSIONS

5.3.1.4.1 Gas and Smoke

The coach shall meet all Federal and State Emission standards in effect at the time of delivery. If the Contractor delivers a coach that fails to meet these standards, it will then be the responsibility of the Contractor to assume the costs and fines (if so imposed) in order to deliver a coach which will pass Federal and State Emission Standards in effect at the time of delivery.

5.3.1.4.2 Exhaust Location

Exhaust gases and waste heat shall be discharged on the left side at roof level and shall be directed towards the rear of the coach. Exhaust piping shall not restrict the underbody clearances defined in Section 5.1.4.1.2. All exhaust aftertreatment equipment shall be isolated and insulated from radiator and cooling components on the inside and outer body components and painted surfaces on the outside.

5.3.1.4.3 Exterior Noise

Airborne noise generated by the coach and measured from either side shall not exceed 83 dBA under full power acceleration when operated at or below 35 mph at curb weight and just prior to transmission upshift. The maximum noise level generated by the coach pulling away from a stop at full power shall not exceed 83 dBA. The coach-generated noise at curb idle shall not exceed 65 dBA. If the noise contains an audible discrete

frequency, a penalty of 5 dBA shall be added to the sound level measured. All noise readings shall be taken 50 feet from, and perpendicular to, the center line of the coach with all accessories operating.

Instrumentation, test sites, and other general requirements shall be in accordance with SAE Standard J866. The pull-away test shall begin with the front bumper even with the microphone. The curb idle test shall be conducted with the rear bumper even with the microphone.

5.3.2 AXLES

5.3.2.1 FRONT AXLE

The front axle shall be a Meritor conventional reverse Elliot-type (or Approved Equal) with tubular steel or "I" beam axle center. The front axle shall be non-driving with a load rating sufficient for the coach loaded to GVWR. Wheel hubs shall be carried on two opposed tapered roller bearings. The upper front axle radius rod shall incorporate a threaded caster adjusting clamp or shim pack to permit caster adjustment without removal of the radius rod from the coach. Adjustable stop screws at each axle center end shall be provided to adjust coach maximum turn angle and prevent interference with adjacent parts. Front axle wheel bearings shall incorporate suitable oil hubs with fill plugs located on the outboard end of each hub.

5.3.2.2 REAR AXLE

The rear axle shall be a Meritor 71000 Series, or Approved Equal, single full floating, heavy-duty axle. The rear axle shall be the driving axle and shall have a separable carrier housing construction with a load rating sufficient for the coach loaded to GVWR. Rear axle shall include removable end tubes, press fit into housing and threaded to accommodate wheel bearing adjusting nuts. Axle housing shall be provided with a standard size external hex head magnetic-type drain plug.

The differential assembly, drive pinion and pinion bearing cage shall be mounted in a differential carrier which can be removed as a complete unit from the axle housing. A conventional four (4) pinion differential carried in a two-piece case mounted on tapered roller bearings shall be included. Bevel drive gear shall be fastened to the flanged half of the differential case with bolts to be secured by torque nuts or by cap screws.

Axle shafts shall be full-floating and the flange at the outer end shall be attached to wheel hubs by studs, nuts, and tapered dowels.

Axle shall incorporate a Unitized Wheel End containing seals, bearings and shall utilize oil hubs with fill plugs located on the outboard end of each hub, all pre-loaded in a single unitized hub assembly.

The rear axle ratio for the coach shall be manufacturer's standard for Port Authority's service area and duty environment, and should be designed to ensure proper performance, economy, and durability and shall be compatible with the engine transmission configuration. Transfer of gear noise to the coach interior shall be minimized. The driven axle shall be designed to operate for 250,000 miles or 5 years, whichever comes first, without repairs.

Final axle configuration shall have the approval of Port Authority.

5.3.3 SUSPENSION

5.3.3.1 GENERAL REQUIREMENTS

A full air suspension system is required with controls to compensate automatically for load variations. The full air suspension system generally consists of suspension support beams, air springs (bellows), leveling valves, radius rods and assemblies, shock absorbers and axle stops. The basic suspension system shall last the life of the coach without major overhaul or replacement. Consumable items such as bushings and air springs shall be easily and quickly replaceable by a 3M mechanic. Adjustment point 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 suspension system shall permit a minimum wheel travel of 3.5 inches in jounce and three-(3) inches in rebound. Elastomeric bumpers shall be provided at the limit of jounce travel. Rebound travel shall be limited hydraulically by the shock absorbers. Suspension shall be designed such that failure of any airspring will not cause damage to suspension or body, or cause drag of tires on fender wells to bring the coach to a stop.

Suspension system shall incorporate Barksdale valves for automatic height and leveling control so that, regardless of load, the coach height relative to the centerline of the wheels does not change more than ± ½ inch at any point from the height required in Section 5.2.1.5.1.

5.3.3.2 AIR SPRINGS AND SHOCK ABSORBERS

5.3.3.2.1 Air Springs

Air springs shall be rolling lobe type one-piece assembly air bellows, Firestone or Approved Equal, a minimum of two (2) for each axle. The air springs shall act as the vertical flexible connection between the axles and body to minimize road shocks. Special cold weather air bellows are acceptable. Air springs must have sufficient capacity to withstand heavier loads of current transit coaches.

5.3.3.2.2 Shock Absorbers

Shock absorbers shall be KONI 90 series or Approved Equal, telescoping double-acting gas hydraulic type with one located on each side of each axle of the coach. The shocks shall be attached to the suspension arms or axles and to an appropriate location on the chassis. The shock absorbers are to dampen the road shocks and to provide a smooth ride and shall be sufficient to control coach motion to four (4) cycles after hitting road perturbations. Loading of shocks with vehicle at GVWR, shall be less than 80% of shock rating. Shock absorbers shall maintain their effectiveness for 50,000 miles and shall be replaceable by a 2M mechanic in less than fifteen (15) minutes. Shock absorbers are to have lifetime bushings.

5.3.3.2.3 Kneeling

A driver-actuated kneeling device shall lower the coach during loading or unloading operations, regardless of load, to a first step height of 11.5 inches measured at the longitudinal centerline of the front door. The coach shall kneel and rise at a maximum rate of 1.25 inches per second at essentially a constant rate. After kneeling, the coach shall rise within 2 seconds to a height permitting the coach to resume service and shall rise to the correct operating height within 7 seconds. During the lowering and raising operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. measured on the front door step tread. An indicator visible to the driver shall be illuminated until the coach is raised to a height adequate for safe street travel. The kneeler control shall be powered separately, not through the front door circuit. The kneeler system shall be capable of activating with the bus transmission in gear and the parking brake released. The brake and throttle interlock shall engage when the coach is in the kneeled position to prevent movement.

5.3.3.2.4 Lubrication

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 from a pit or with the coach on a hoist with a standard grease gun without a flexible hose end. Each element requiring lubrication shall have its own grease fitting with a relief path. Lubricant specified shall be standard for all elements on the coach serviced by standard fittings.

5.3.4 STEERING

5.3.4.1 STRENGTH

Fatigue life of all steering components shall exceed 1,000,000 miles. No element of the steering system shall fail before suspension system components when one of the tires strikes a severe road hazard. Inadvertent alterations of steering as a result of striking road hazards are steering failures.

5.3.4.2 TURNING RADIUS

Outside body corner turning radius for a standard configuration 40-foot long coach shall not exceed 44 feet at SLW, in both left and right turns.

5.3.4.3 TURNING EFFORT

The steering wheel shall not be less than 19 inches and not more than 23 inches in diameter and shall be shaped for firm grip with comfort for long periods of time. Steering wheel shall be made from hard plastic around a steel wire. No rubber covered or leather wrapped wheels shall be permitted. The steering wheel shall be removable with a standard or universal puller. The steering column shall be a Douglas tilt/telescopic model and fully adjustable unit in all positions.

Sheppard hydraulically-assisted power steering or Approved Equal shall be provided. The steering gear shall be an integral type, with flexible lines eliminated or the number and length minimized. Test ports for system diagnosis shall be available at the steering box. Steering fluid shall be an approved synthetic fluid that meets the requirements of the power steering system manufacturer. An inline fluid filter shall be provided before the power steering box. All non-flexible steering and hydraulic lines shall be made of at least 300 grade stainless steel. Steering torque applied by the driver shall not exceed 10 foot-pounds, with the front wheels straight ahead to turn 10 degrees.

Steering torque may increase to 70 foot-pounds when the wheels are approaching the steering stops. Steering effort shall be measured with the coach at SLW, stopped with the brakes released, the tires inflated to recommended pressure, and the engine at normal idling speed on clean, dry, level commercial asphalt pavement. Power steering failure shall not result in loss of steering control. With the coach 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 six 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.

5.3.5 BRAKES AND AIR EQUIPMENT

5.3.5.1 GENERAL

5.3.5.1.1 Service and Emergency Brakes

Service braking shall be S-CAM type and applied by four (4) wheel internal expanding air operated brakes. Force to activate the brake pedal control shall be an essentially linear function of the coach deceleration rate and shall not exceed seventy-(70) pounds at a point seven-(7) inches above the heel point of the pedal to achieve maximum full service braking. Brakes shall be capable of stopping the vehicle from a speed of 20 mph with a seated load weight (SLW) at a rate of deceleration equivalent to a stop within thirty-five (35) feet. The entire service brake system, excluding friction material, shall have an overhaul or replacement life design goal of at least 50,000 miles and a required life of the friction material of at least 25,000 miles. The brake system shall comply with FMVSS 121, the latest requirements in effect as of the date of start of coach manufacture. Brakes shall not "squeal" in coach operation. All brakes on all axles shall be applied simultaneously and will not, by design, pull the coach to the right or left of the centerline of travel. Front brakes shall not apply or lock-up prior to the rear in slippery road conditions.

All brake chambers shall be MGM LTR-T, Transit Model with 3 inch long stroke.

Unless otherwise specified all Brake system components shall be manufactured by Bendix-Westinghouse or Approved Equal. The brake application valve shall be the Bendix-Westinghouse Type E-10. The parking brake valve shall be a Bendix-Westinghouse PP1-60 pound valve, Part Number 287325 or 10898.

Rear actuators for service brakes shall be MGM LTR-L3 30/30 or MGM LTR-L3 30/36. All anchor pins and hardware shall be coated with Anti-seize.

Appropriate valving and piping shall be installed on the coach to provide for two stage release of parking brakes. Also, if a reduction of air pressure occurs in the braking system, the parking brake system shall automatically activate between 20 and 40 psi. The push-pull valve shall be held up by spring pressure in the event that the air pressure drops to 0 psi. In an emergency, the parking brakes shall be capable of bringing the coach to a stop from a speed of 20 miles per hour at a deceleration rate equivalent to a stop within eighty-five (85) feet with a seated passenger load.

Slack adjusters provided for S-CAM brakes shall be Haldex automatic or Approved Equal.

5.3.5.1.2 Friction Materials

Brake shoes shall be of 16.5", two (2) shoe design, cast, heavy duty type to assure uniform pressure and constructed so as to last the life of the vehicle. Brake blocks shall be the manufacturer's standard non-asbestos linings and shall be sufficiently sized to achieve the performance requirements set forth in Section 5.3.5.1.1. Scribe lines shall be provided on all brake shoes of both axles to indicate when linings should be changed.

5.3.5.1.3 Hubs and Drums

Wheel bearing seals shall run on replaceable wear surfaces. Wheel bearing and hub seals shall not leak or weep lubricant for 100,000 miles when running on the design operating profile.

5.3.5.1.4 Air System

Unless otherwise specified, all air system components shall be manufactured by Bendix-Westinghouse or Approved Equal. The coach air system shall operate all accessories and the braking system with reserve capacity. The engine-driven air compressor, with remote mounted governor, shall charge the air system from 40 psi to the governor cutoff pressure in less than 3 minutes while not exceeding the engine's rated speed. Intake air shall be drawn from the engine air cleaner. Regardless of the system's air pressure, idle up to the rated engine speed shall be available to the driver with the transmission in neutral, the parking brake applied, and the fast idle off. Air pressure shall be governed between 100-120 psi minimum and 125-135 psi maximum.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J844 Type 1 for copper tubing with standard, brass, flared, or ball sleeve fittings, or SAE Standard J844 Type 3B for nylon tubing if not subjected to temperatures over 200°F.

Accessory and other non-critical lines may use Type 3A tubing. 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
Gray	Indicates accelerator
Black	Indicates accessories
Orange	Indicates fuel

Line supports shall prevent movement, flexing, tension strain, and vibration. Copper lines shall be supported by insulated "P" clamps to prevent the lines from touching one another or any component of the coach. 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 but shall be continuously supported.

If copper air lines are used, they shall be identified with stamped metal tags. Tags should be located at front and rear of bus and at all junction points. The tags shall refer to diagrams in the maintenance manual.

The compressor discharge line between the engine and body-mounted equipment shall be a flexible convoluted copper or stainless steel line. Other lines necessary to maintain system reliability shall be flexible Parker "213" hose. End fittings shall be standard SAE or JIC brass or steel, flanged reusable, swivel type fittings. The discharged air as it leaves the compressor shall not pass through a 90° fitting. A straight, long ell or large radius bend shall be incorporated so as not to restrict the flow of air. Flexible hoses shall be as short as practicable and individually supported. They shall not touch one another or any part of the coach except for the supporting grommets. Flexible lines shall be supported at 2 foot intervals or less. Air lines shall be cleaned and blown out before installation, and shall not leak down more than 6 psi, as indicated on the instrument panel mounted air gauges, within 15 minutes from the point of governor cut-off.

All air lines shall be sloped toward a reservoir and routed to prevent water traps. No low spots or "water traps" will be permitted. Grommets shall protect the air lines at all points where they pass through understructure components.

The air compressor discharge line from the bulkhead connector to the air dryer shall be copper tubing. No 90° fittings shall be used between the air compressor and the air dryer. All air reservoirs shall meet the requirements of SAE Standard J10 and shall be equipped with clean-out plugs. Drain valves shall be guarded or flush type. These valves and any automatic moisture ejector valves shall be protected from road hazards by major structural members. Reservoirs shall be sloped toward the drain valve. Drain valves shall be a John Brooks Co. Part #25-4F-4FBT or Approved Equal. The air system shall be protected by a pressure relief valve set at 150 psi and shall be equipped with check valves and pressure protection valves to assure partial operation in case of line failures.

Two (2) "quick disconnect" fittings shall be provided, one (1) in the engine compartment and one (1) accessible from the front of the bus. Both connections shall also incorporate a John Brooks Co. Part #25-4F-4FBT manual "shut-off" valve. The line from the quick disconnects to the main air tank shall have a minimum i.d. of 3/8-inch. The location of the front air connection shall be accessible from the front of the bus but concealed from view. The location of both quick disconnects shall require the approval of the Port Authority's representative.

For the purpose of towing, front "quick disconnect" fitting shall be a "female" Schrader #5139-11 or Approved Equal.

Rear "quick disconnect" fitting shall be a "male" Schrader #5138-11 or Approved Equal.

Piping at front and rear shall permit bus to bus air filling.

5.3.5.1.5 Air Dryer

A twin, alternating desiccant tower air dryer or Approved Equal shall be used to prevent accumulation of moisture in the air system. The air dryer shall be mounted in the middle of the bus. All lines shall be sloped down towards the air dryer. A 24 volt heater shall be installed to prevent freezing. The heater shall be thermostatically controlled and be powered from a run buss bar. A check valve shall be installed in the air system between the air dryer and wet tank to prevent air loss in the system.

5.3.6 GENERAL CHASSIS

5.3.6.1 WHEELS AND TIRES

5.3.6.1.1 Wheels

Wheels shall be hub piloted and shall be integral-formed, ALCOA or Approved Equal polish finished aluminum with Durabrite coating of drop center construction. All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with 12R22.5 tubeless load range H tires in size and load-carrying capacity. Front wheels and tires shall be balanced as an assembly. An aluminum based Never Seize compound or Approved Equal shall be used between the steel hub/brake drum assembly and the aluminum wheel. Valve core extensions shall be provided to facilitate servicing from the side of the coach.

Contractor shall supply one (1) spare wheel, as described above, with each coach.

5.3.6.1.2 Tires

Tires will be supplied by Port Authority's tire contractor.

5.3.6.1.3 Hubodometer

No Hubodometer is required on coaches under this contract.

5.3.6.2 FUEL SYSTEM

5.3.6.2.1 Fuel Tanks

The fuel tank(s) shall be securely mounted to the coach to prevent movement during coach maneuvers, but shall be easily removable for replacement or cleaning. Fuel tank capacity shall be at least 125 usable gallons. The fuel tank shall be manufactured from stainless steel and be equipped with an external, hex head brass drain ¾ inch N.P.T. size plug. Shall be located at the lowest point of the tank. The tank shall be baffled internally to prevent fuel sloshing noises regardless of fill level. The baffles or fuel pickup location shall assure continuous full power operation on a six (6) percent upgrade for 15 minutes starting with no more than 25 gallons of fuel over the unusable amount in the tank. The coach shall operate at idle on a six (6) percent downgrade for 30 minutes starting with no more than ten-(10) gallons of fuel over the unusable amount in the tank. The fuel tank shall be equipped with the Emco-Wheaton posi/lock-105 fleet fueling system.

5.3.6.2.2 Fuel Filler

The fuel filler shall be located 7 to 25 feet behind the centerline of the front door on the right side of the coach. The filler system shall be Emco-Wheaton or Approved Equal pressure fuel and shall be recessed into the body so that spilled fuel will not run onto the outside surface of the coach. The fuel tank filler neck shall include an anti-spill valve. The filler shall accommodate a 1½ inch diameter nozzle and a minimum fill rate of 40 gallons per minute of foam-free fuel without spitting back or causing the nozzle to shut off before the tank is full. An audible signal shall indicate when the tank is essentially full.

The system provided shall be composed of an Emco-Wheaton or Approved Equal filler neck assembly G-45 type, J1201 dust cap, G2256 adapter, G2269 pressure relief valve, G2257 whistle and G2270 level control, or equal, all of which must be compatible with the G2266-105 "POSI-LOCK" nozzle.

5.3.6.2.3 Fuel Lines

The fuel lines shall be stainless steel or Approved Equal tubing in compliance with all regulations regarding fuel lines.

5.3.6.3 DIESEL EMISSIONS FLUID (DEF)

5.3.6.3.1 Storage Tank

DEF fluid shall be stored in a heated tank adequately sized to meet the engine manufacturer's requirements and shall, at a minimum, be sized to contain sufficient DEF capacity to coincide with the consumption of 250 gallons of diesel fuel.

5.3.6.3.2 Fill Location

The DEF fill location shall be on the curbside of the coach, rearward of the rear axle and shall be recessed into the body so that spilled DEF will not run onto the outside surface of the coach.

5.3.6.4 BUMPER SYSTEM

5.3.6.4.1 Location

Bumpers shall be Romeo Rim Help 'S' type or Approved Equal and shall provide impact protection for the front and rear of the coach up to 26 inches above the ground. The bumpers shall wrap around the coach to the extent practicable without exceeding allowable coach width. Both front and rear bumpers shall utilize bolt brackets (consisting of bolts welded to a piece of flat bow stock) to facilitate easy removal and reinstallation of bumpers. Details of these brackets will be provided at the EDRMS.

5.3.6.4.2 Front Bumper

No part of the coach, including the bumper, shall be damaged as a result of 6.5 mph impacts at any point by the striker defined in FMVSS #215, loaded to 4,000 pounds parallel to the longitudinal centerline of the coach and 5.5 mph impacts into the corners at a 30° angle to the longitudinal centerline of the coach. The energy absorption system of the bumper shall be independent of every power system of the coach and shall not require service maintenance in normal operation during the service life of the coach. The flexible portion of the bumper may increase the overall coach length specified in Section 5.1.4.1.1 by no more than 6 inches. A skid plate under the full width of the bumper shall be provided to protect the wheelchair ramp. This shall be a ¼ inch plate, mounted at a 45° angle. Installation to be approved by an Authority representative.

5.3.6.4.3 Rear Bumper

The rear bumper and its mounting shall provide impact protection to the coach at curb weight from a 2-mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the coach. 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 with plane discontinuities up to 1 inch high and accelerations up to 2 mph/sec. The rear bumper shall protect the coach, when impacted anywhere along its width by the striker defined in FMVSS #215 loaded to 4,000 pounds, at corners up to a 30° angle to the longitudinal centerline of the coach. The rear bumper or bumper extensions shall be shaped to preclude unauthorized riders standing on the bumper and shall wrap around the coach to protect the engine compartment doors and radiator. The bumper extensions shall not hinder service and shall be flared to the coach body with no protrusion or sharp edges. The bumper shall be independent of all power systems of the coach and shall not require service of maintenance in normal operation during the service life of the coach. Any flexible portion of the bumper may increase the overall coach length specified in Section 5.1.4.1.1 by no more than 6 inches.

5.3.6.4.4 Bumper Material

Bumper material shall be corrosion-resistant. Visible surfaces shall be black. These qualities shall be sustained throughout the service life of the coach.

5.3.6.5 ELECTRICAL SYSTEM

5.3.6.5.1 General Requirements

The electrical system shall provide and distribute power to ensure satisfactory performance of all electrical components. The system shall supply a nominal 24 volts DC. Electrical power provided for the fare collection device and the two-way radio equipment shall be nominal 12 volts DC. Precautions shall be taken to minimize hazards to service personnel. The power generating system shall be rated sufficiently higher than the total possible electrical load to maintain the charge on the batteries at all operating conditions including the engine at idle. Amperage draw of the coach electrical system with all accessories on shall be provided to Port Authority. All circuits, shall be protected by circuit breakers or fuses. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable, and they shall be easily accessible for replacement.

Redundant grounds shall be used for all electrical equipment, except where it can be demonstrated that redundant grounds are not feasible or practicable. One ground may be the coach body and framing. Grounds shall not be carried through, piping, hinges, bolted

joints (except those specifically designed as electrical connectors), or power plant mountings. All grounding bolts shall have star or lock washers. The grounding bolt shall be sized to provide an electrical load carrying capacity equal to the total ampere capacity of all ground wires added together. Grounding wire terminal rings shall be sized appropriately for the wire gauge size. No more than eight (8) ground wires shall be attached to one ground stud. Electrical equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system. Major wiring harnesses shall not be located under the coach floor, and under-floor wiring shall be eliminated to the extent practicable. Wiring and electrical equipment necessarily located under the coach shall be insulated from water, heat, corrosion, and mechanical damage. All exterior lighting and interior incandescent lighting shall be nominal 12 V.D.C. Two anti-static straps shall be provided from a frame member to the grounds.

5.3.6.5.2 Electrical Control System

5.3.6.5.2.1 Distributed Intelligent Network System (DINEX)

The electrical control and wiring system shall be I/O Controls DINEX G3 Multiplex System or Approved Equal. The proposed multiplex network system shall provide a module keying feature that is an external device containing the ID number such that it can be easily attached to or removed from a module.

Versatility and future expansion of the system shall be provided for by expandable system architecture. System architecture shall also include:

- Communication data protocol shall be an industry standard J1939 protocol. The communication data bus shall be of a ring loop design providing built in redundancy. Any single malfunction of the data loop causing an interruption in multiplex system communication shall cause a warning signal to be displayed on the dash tell-tale display. Interruption of system communication shall also cause the Main Bus Controller to redirect communication thereby reestablishing complete system communication for one level of redundancy.

- The multiplex system in sleep mode shall have a current draw not to exceed 1 mA thereby substantially extending vehicle battery life.
- In addition to containing the unique ID for a module, the keying feature of each system module shall also have the ability, for later retrieval, to recall input/output status settings for that particular module in case of module and/or system malfunction/failure.
- System shall be able to detect electrical arcing in an output load circuit in order to alert maintenance personnel to potential electrical system malfunctions and possible fire hazards. Actual electrical arcing of selected outputs shall be viewable via laptop PC and/or PDA.

- Electrical arcing detection feature shall include the ability, through programming, to alert the driver to a potential fire hazard and to shut down predefined outputs if the electrical arching reaches preprogrammed levels of intensity.
- System shall be programmable to monitor the current draw of selected outputs. Actual current draw of selected outputs shall be viewable via laptop PC and/or PDA.
- System shall be programmable to provide warning if selected outputs have a current draw that exceeds predefined limits.
- System shall be programmable to shut down selected outputs if current draw exceeds preset limits.
- Selected individual multiplex system outputs shall be capable of driving loads with current requirements of 30 amps continuous without the use of relays.
- Main Bus Controller includes a built in 32K byte Bus Critical Condition / Performance Data Logger to log system anomalies for future retrieval. Data logger shall be capable of logging all multiplex system information and industry standard broadcasted J1939 information from other subsystems. Data logger shall also have the ability to recall multiplex system input/output/J1939 status settings in case of system malfunction/failure for later retrieval. Additional 256K byte extended data logger memory module is required.
- The multiplex power source shall be isolated thereby avoiding any ground noise.
- All individual loads that require a maximum current of 10 amps continuous / 20 amps intermittent or less shall be driven directly from a multiplex module output without the use of relays.
- Each module shall utilize LED's to indicate input status, output status, circuit integrity and assist in rapid circuit diagnostics and verification of output load and wiring integrity.
- Programmable time delay functions and integrated flasher capabilities shall be contained in the control module (Main Bus Controller).
- The program for operating the bus shall be contained in the control module.
- A single download point shall be located on the bus for reprogramming.
- A minimum of 10% spare system inputs and 10% spare system outputs are required in each multiplex zone.
- The components of the multiplex system shall be of modular design thereby providing for ease of replacement by field maintenance personnel.
- If required to interface with the vehicle engine/transmission optional J1939 or J1708 gateways shall be available.
- If required to interface with other vehicle subsystems optional gateways shall be available.

The system components shall be capable of performing reliable operation in an environment of between -40° C to +85° C while encountering mobile shock and vibrations. All system multiplex modules shall also comply with the following:

- All internal components, to include all integrated circuits and connections, shall be soldered.
- No internal sockets or plugs shall be allowed.
- Modules shall not be potted to allow for future repair/rebuilding.
- Each unique output of a module shall be equipped with its own fuse to protect each individual load circuit for over current protection.
- Highly visible, easily accessible fuses are required to assist in the rapid diagnostic of malfunctions of the load circuit. No self resetting fuses will be accepted.
- Each module shall be adequately shielded to prevent interference by EMI and RFI.
- Dedicated feedback point for each output shall be part of the system to provide capability of monitoring each isolated output load and fuse status via PDA or PC.
- Isolated multiplex system power supply shall have the following voltage input range: Ten VDC to thirty-two VDC input voltage range for twenty-four VDC electrical systems. Six VDC to sixteen VDC input voltage range for twelve VDC electrical systems.

5.3.6.5.2.2 Multifunction Display (MDF) Requirements:

The driver's information area shall include the I/O Controls Multifunction Display (MDF) module. The proposed display is a complete onboard computer system. The color LCD screen will display safety related information and/or operational information in large, easy to read graphics. Additionally the color LCD display will display video information received from the rear door camera when, only when the rear door is in the open position.. The MDF is also capable of displaying Power Train information and J1939 information plus the MDF includes sixteen programmable warning lights with an audible warning alarm. The MDF has both driving mode and maintenance mode. The driving mode is intended to provide useful information during vehicle operation. The maintenance mode is used for vehicle trouble-shooting or service. The MDF enclosure shall have an IP65 rating.

MDF System architecture shall include:

- 6.4" Color LCD Display
- Large graphic Man-Machine Interface (MMI)
- Displays Need-to-know information
- 5 video camera inputs
- 16 telltale LED's
- RS-485 / DINEX data bus interface
- J1939 data bus interface

- CAN bus communication protocol
- 250 KBPS data communication rate

5.3.6.5.2.3 DINEX Test Equipment

Test equipment consisting of the items shown below shall be provided. The number of sets provided shall be equal to ten percent (10%) of the total number of coaches delivered under this contract but no less than 20[1] sets

Part Number: G3-MK-888 / Description: Circuit Tester
Part Number: G3-MK-Charger / Description: Program Loader
Part Number: G3-MK-Program / Description: Program Module
Part Number: G3-MK-IDWT / Description: ID Writer
Part Number: G3-MK-CAN / Description: DINEX CAN Interface with DINEX G3 Utility
Part Number: T2-MK-232 / Description: DINEX RS232/RS485 Interface with IOC Download Utility
Part Number: CSE-0078-1-KIT2 / Description: Storage Case

5.3.6.5.3 Modular Design

Design of the electrical system shall be modular so that each major component, apparatus panel, or wiring bundle is easily separable with standard hand tools or by means of connectors.

Each module shall be removable and replaceable in less than 30 minutes by a 3M mechanic. Power plant wiring and wiring for rear lighting systems shall be independent wiring modules. Replacement of the engine compartment wiring module(s) shall not require pulling wires through any bulkhead or removing any terminals from the wiring. The harness for the rear lights (tail, stop, turn, reverse, and license plate) shall be provided with a connector (near the door hinge point, if applicable) to facilitate harness replacement. All relays, diodes and circuit breakers shall be plug-in type and shall be approved by Port Authority.

5.3.6.5.4 Wiring and Terminals

All wiring between major electrical components and termination's, except battery wiring, shall have double electrical insulation, shall be waterproof and be numbered (1-2" interval) and color-coded full length. All coach wiring, except battery and starter circuits, shall meet the specification requirements of SAE Standard J1128 for Type SXL and SAE Recommended Practice J1292. Battery and starter wiring shall be continuous cables with connections secured by bolted terminals and shall conform to the specification requirements of SAE Standard J1127 for Type SGT and SGX and SAE Recommended Practice J541. Color-coded wire identification systems must be approved by Port

Authority prior to the bid submission. Installation shall permit ease of replacement. All wiring harnesses shall utilize weatherproof connectors. All wiring harnesses over 5 feet long and containing at least 5 wires shall include 20 per cent excess wires for spares that are the same size as the largest wire in the harness excluding the battery cables. Wiring harnesses shall not contain wires of different voltages unless all wires within the harness are sized to carry current and insulated for the highest voltage wire in the harness. Wiring harnesses in the engine and A/C compartment shall have weatherproof connectors located at the engine-A/C bulkhead. Wiring in engine and A/C compartment shall be kept to a minimum and not be located in areas of high heat concentration or water. Double insulation shall be maintained as close to the terminals as practicable. All coach wiring shall be 16 gauge minimum; exceptions will be granted for communication and multiplex control wiring.

The requirement for double insulation shall be met by sheathing all wires and harnesses with non-conductive, rigid or flexible conduit. Grommets of elastomeric material shall be provided at points where wiring penetrates metal structure. Wiring supports shall be nonconductive. Precautions shall be taken to avoid damage from heat, water, solvents, or chafing.

Wiring length shall allow replacement of end terminals twice without pulling, stretching, or replacing the wire. Connections of wire 12 gauge or larger shall be bolted. Except for those on large wires such as battery cables, terminals shall be crimped 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. Only rosin core solder shall be used. Terminals shall be full ring type and secured with cross-recessed screws. Terminals and fasteners shall be corrosion-resistant. All terminals shall completely be covered with dielectric grease. T-splices may be used when it is less than 25,000 circular mills of copper in cross-section; a mechanical clamp is used 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. No in-line splices are permitted in wiring harnesses.

5.3.6.5.5 Junction Boxes

All relays, controllers, flashers, circuit breakers, and other electrical components should be mounted in easily accessible non-corrosive junction boxes. Hinges (if used) and all hardware shall be stainless steel. Mounting bolts shall not be used as ground studs. The boxes shall be sealed to prevent moisture from normal sources, including engine compartment cleaning, from reaching the electrical components and shall prevent fire that may occur inside the box from propagating outside the box. The components and circuits in each box shall be identified and their locations recorded on a schematic drawing permanently glued to or printed on the inside of the box cover or door. The drawing shall be protected from oil, grease, fuel, and abrasion. The front junction box shall be completely serviceable from the driver's seat, the vestibule, or from outside the coach. Access covers for any junction boxes serviced from inside the coach shall be equipped with tamper-proof latching mechanisms. A rear start-and-run control box shall be mounted in an accessible location in the engine compartment.

5.3.6.6 ELECTRICAL COMPONENTS

5.3.6.6.1 General Requirements

All electrical components, including switches, relays, flashers, and circuit breakers, shall be heavy-duty designs. To the extent practicable, these components shall be designed to last the service life of the coach and shall be replaceable in less than 5 minutes by a 3M Mechanic. Sockets of plug-in components shall be polarized to insure proper installation and function. The components shall be positively retained. Any manual reset circuit breakers critical to the operation of the coach shall be mounted in a location convenient to the driver with visible indication of open circuits.

All electric motors, except cranking motors, shall be heavy-duty type, with a constant duty rating of no less than 10,000 hours, and shall be brushless or withstand 3 brush changes and 1 commutator lathe turning. Electric motors shall be located for easy replacement and except for the cranking motor the brushes shall be replaceable in less than 15 minutes by a 3M Mechanic without removing the motor.

Electrical loads shall be switched on the positive side. Ground switching shall only be utilized when no other means of circuit control is possible. A list of the electrical loads that are switched on the ground side must be submitted and approved by Port Authority.

Wiring terminals connected to the backs of switches shall be held with plastic sockets. They shall be polarized and wires shall be locked in but also replaceable.

5.3.6.6.2 Batteries

Batteries shall be easily accessible for inspection, serviceable only from outside the coach, and securely mounted on trays. Batteries shall be of premium construction, wet type, closed post with one-piece cover and handles of heavy-duty steel drop type or a heavy-duty nylon cord with plastic grips, and shall be fitted with threaded stud terminals on the end of the battery. The positive terminal shall be a ½ inch stud with a ¾ inch hex nut across the flat and the negative terminal shall be a 3/8-inch stud with an 11/16 inch hex nut across the flat. Both studs shall be of sufficient length to allow at least one (1) thread to protrude from the nut after the electrical cables are affixed (half nuts are not acceptable). Positive and negative terminals shall have different size studs, and the battery terminals and cables shall be arranged to prevent incorrect installation. Battery terminals shall be located for access in less than 30 seconds with jumper cables. No less than two conventional lead-acid batteries conforming to SAE Standard J537-Type 20T8A and the specifications stated herein shall be provided.

The batteries supplied should meet or exceed the following requirements:

- Dimensions (approximate) - Length: 21-7/16", Width: 11", Max. Overall Height: 9-7/8"
- CCA - 1250 Minimum at 0 °F.
- Reserve Capacity: - 420 minutes minimum.
- Plates - 25 Minimum per cell
- Plate Grids shall be of virgin or purified lead
- Plan - 187-B (with side straps)
- Warranty - 24 months from date coach first placed in service by Port Authority

The battery tray shall be a pull out slide type that will properly support the batteries during service, filling with automatic equipment, inspection, and replacement. Battery tray shall be constructed of high grade stainless steel and have provision for lubricating the slides or with grease fitting(s). The pull out requirement is not applicable if the batteries are properly supported in a compartment that allows inspection of water levels, filling with automatic or manual equipment, and replacement of batteries without lifting. A positive lock shall retain the battery tray in the normal position. Battery cables shall be flexible and sufficiently long to reach the batteries in extended positions without stretching or pulling on any connection, and shall not lie on top of the batteries. The battery terminals and cables shall be color-coded with red for the primary positive, black for negative, and another color for any intermediate voltage cables. No other components (including Master Battery switch) or wiring connections shall be located in the battery compartment.

5.3.6.6.3 Master Battery Switch

Master battery switches and fuses shall be provided for both the 24V and 12V circuits. These shall be Cole Hersc level type and shall be ganged together. They shall be located near the batteries but not in battery compartment for complete disconnecting from all coach electrical systems. The master switches and fuses shall be accessible in less than 10 seconds for activation without the use of any tool. A decal shall be placed on the outside of the compartment door through which the master battery switches are accessed. It shall read "Emergency Battery Shut Off Switch Inside". The master switch shall be capable of carrying and interrupting the total circuit load. Opening the master switch with the power plant operating shall not damage any component of the electrical system. Any sub-systems or components which are required to be connected to the batteries and remain energized at all times shall be attached to the "line" (or hot) side of the master battery switch. All unswitched battery connections and loads shall be identified and require Port Authority approval. Only the required large battery cables shall be attached to the batteries.

5.3.6.6.4 Fire Suppression System

5.3.6.6.4.1 Fire Suppression System Description

The vehicle shall be equipped with an AMEREX or Approved Equal ABC dry chemical pre-engineered fire suppression system model V25 or Approved Equal. The system shall be approved and listed for use at -65° F to 150° F by Factory Mutual Research Corporation. The automatic actuation system shall provide 24-hour fire detection of the engine compartment.

5.3.6.6.4.2 Fire Suppression System Equipment

A minimum 25 pound capacity agent cylinder of the stored pressure type shall be furnished and be constructed of welded steel and must conform to DOT specification 4BW, and be rated for 12 year minimum hydrostatic retest. The cylinder shall be outfitted with a gauge and a forged brass valve assembly.

Three (3) temperature sensitive weather proof miniature thermostats, constructed of stainless steel material, shall be located in the engine compartment. Detectors shall be approved for use by Factory Mutual Research Corporation as heat actuated fire detectors. The detectors shall be normally open and shall be capable of carrying sufficient amperage for the purposes of firing the electric actuator. The electric control head shall also be activated manually by depressing an electric switch (button w/pull pin, labeled 'fire') mounted in the driver's dash area.

A Modular Control Panel III shall be provided to electrically supervise the automatic fire suppression system following 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 or less of detecting a fire. An engine shutdown reset button on panel will be included.

Fire extinguisher tanks/bottles shall be DOT-approved and utilize high speed valves operating within 10 milliseconds. A minimum of four (4) brass nozzles shall be located in the engine compartment, fitted with dust caps, that, upon actuation, are displaced to allow full ABC chemical flow.

All remaining valves, nozzles, piping, and hardware shall be stainless steel or other corrosion-resistant material that must be approved by Port Authority. Contractor shall supply sets of portable Fire Suppression System Test Kits In a quantity equal to ten percent (10%) of the total number of coaches delivered under this contract. These shall contain a squib simulator, an actuation network test adapter and a discharge hose blow out adapter.

The contractor shall provide a written sign off (from the fire suppression manufacturer) that all installation requirements have been met on the pilot bus system.

5.3.6.6.4.3 Fire Suppression System Operation

The system shall be armed at all times whether the coach is operating or shut down. If a fire is detected by the sensors, the control box alarm shall sound and also activate a light warning system. The engine shall shut down and the fire suppression system shall discharge to extinguish the fire. System shall be resetable after discharge so that engine may be restarted and all vehicle systems are operational.

5.3.6.6.4.4 Installation and Warranty

Installation of the fire suppression system shall not interfere with the location and/or operation of normal coach equipment. The fire suppression tank gauge must be positioned in order that it can be read by mechanics performing monthly inspections without disassembly of any fire suppression or other coach component. Installation shall be checked and approved by the fire suppression system manufacturer. A check-off sheet must be provided for each bus. Any costs for mandatory checkout procedures for the fire suppression equipment shall be borne by the coach manufacturer. Final installation approval shall be given by Port Authority.

Warranty of the system shall be covered by the basic coach warranty.

5.3.6.6.5 Radio Noise Suppression

Proper suppression equipment shall be provided in the electrical system to eliminate interference with radio and television transmission and reception. This equipment shall not cause interference with any electronic system on the coach.

5.3.6.6.6 Towing Provision

An electrical receptacle for towing purposes shall be provided. This must be a Midland Berg #23602, 6-pin, weatherproof jack or Approved Equal. The receptacle shall be wired into the electrical system so that the brake, tail and turn lamps will operate with power 12V DC supplied from the tow truck. Wiring configuration will be supplied by Port Authority. The location shall be at the front of the bus but concealed from view and from road splash. Final location will require the approval of a Port Authority representative.

5.3.6.6.7 Alternator

The alternator shall be a heavy-duty direct mount gear or belt driven Nichoff 24-volt DC self-rectifying low cut-in type having a minimum rated capacity output of 330 amperes or Approved Equal. Alternator housing shall be supported to prevent stress on the mounting flange and drive. The alternator shall be sized such that at 80% of rated capacity, sufficient electrical power is available to operate all normal coach equipment and maintain a full battery charge in all situations where the engine is running.

5.3.6.6.8 Regulator

The voltage regulator shall be an electronic and fully transistorized type with the control regulator set at 27.5 volts or Approved Equal. The regulator shall be externally mounted from the alternator

5.3.6.6.9 Charging Equalizer

The 12-volt charging system is to be equipped with a Vanner Model #EM-70 12-volt charging equalizer or Approved Equal. The 12-volt charging system must be capable of providing power for all 12-volt accessories and lighting while maintaining an adequate and equal rate of charge for the batteries.

5.3.7 INTERIOR CLIMATE CONTROL

5.3.7.1 CAPACITY AND PERFORMANCE

Interior climate control system shall maintain the interior of the coach at a level suitable for all climatological conditions found in the Western Pennsylvania region. The heating, ventilating, and cooling systems shall maintain an average passenger compartment temperature between 68° and 72°F with a relative humidity of 50 percent or less. The system shall maintain these conditions in ambient temperatures of -10° to 95°F with ambient humidities of 5 to 50 percent while the coach is running on the design operating profile with a full seated and standee load of passengers. In ambient temperatures of 95° to 115°F with relative humidities lower than 50 percent, the system shall maintain a temperature gradient of 25°F while the coach is running on the design operating profile with a full standee load of passengers. In ambient temperatures of -10° to -30°F, the average interior temperature shall not fall below 55°F while the coach is running on the design operating profile with no passengers. The temperatures measured from a height of 6 inches below the ceiling shall be within ± 3°F of the average temperature at the top surface of the seat cushions. Temperatures measured more than 3 inches above the floor shall be within ± 3°F of the average temperature at the top surface of the seat cushions. Floor, underfloor, under-seat, or auxiliary heaters shall be used to achieve these design

requirements for an overhead distributed HVAC system. The interior temperature from front to rear of the coach, at the same height level, shall not vary more than ± 3°F from the average.

The air conditioning system shall be a Thermo-King Intelligair III unit or Approved Equal and shall be capable of reducing the passenger compartment temperature from 110° to 80°F in less than 20 minutes after engine start-up under the following conditions: engine temperature shall be within the normal operating range at the time of start-up of the cool-down test and engine speed shall be at 1500 RPM. During the cool-down period, the refrigerant pressure shall not exceed 400 psig and the condenser discharge air shall not exceed 145°F, measured 6 inches from the surface of the coil. The coach shall be parked in direct sunlight with the ambient temperature at 100°F and humidity less than 20 percent. There shall be no passengers onboard and the doors shall be closed. The cooling mode may operate independently of the propulsion system and outside air may be cut off during the cool-down period.

The climate control system shall be highly reliable since most failures are Class 2. Manually controlled shutoff valves in the refrigerant lines shall allow isolation of the compressor, receiver, and dryer for service. The condenser shall be mounted horizontally at the top of the coach to efficiently transfer heat to the atmosphere, and shall not ingest air warmed by the coach mechanical equipment above the ambient temperature or discharge air into any other system of the coach. The location of the condenser shall preclude its obstruction by wheel splash, road dirt or debris, and shall be approved by Port Authority. The top edge of the condenser shall be sealed sufficiently to the coach body to prevent water from entering and draining down over the sides of the A/C unit. All water shall be directed through the condenser and out the proper drains.

Heat shall be applied to the front and rear step treads to prevent build up of snow or ice. Front stepwell heat may be supplied and controlled by the driver's heater and defroster system. Rear stepwell heat may be supplied and controlled by the underfloor, underseat or auxiliary heating system. A Spheros/Webasto Thermo 300 (104,000BTU) fully automatic diesel fuel-fired heater or Approved Equal shall be provided. The Spheros/Webasto shall be activated automatically when the engine is operating. A ambient sensor shall prevent the Spheros/Webasto from being activated when the temperature is above 55° Fahrenheit. Two wires shall be provided from the Spheros/Webasto heater to the radio box for future activation through the coach two-way radio system. A separate momentary test switch shall be provided to activate the Spheros/Webasto heater. This switch shall cause the Spheros/Webasto heater and water pump to operate for a period of 60 minutes. This switch shall be located so that it can be accessed from the operators area. The Spheros/Webasto heater shall be enclosed in a stainless steel box. The Authority shall approve location of the heater.

HVAC system and all accessories shall comply with and be maintainable by a licensed A/C mechanic. Diagnostic test units shall be supplied for trouble shooting the A/C system. The quantity of sets shall be equal to ten percent (10%) of the total number of coaches delivered under the contract.

5.3.7.2 CONTROLS

All interior climate control system requirements shall be attained automatically. The driver shall control only the defroster and driver's heater. The interior climate control system shall operate as follows:

- An ambient temperature sensor shall cause the air conditioning system to operate at outside temperatures above 63°F.
- A return air temperature sensor of the thermistor type shall cause the main heating system to operate when the inside air is below 70°F.
- The floor or underseat heaters shall operate simultaneously with the main heating unit only when the system is in the heating mode.
- The operator shall be able to over-ride the ambient sensor and cause the air conditioning system to operate when the ambient temperature is above 55°F. This control switch shall have no "Off" position, and should be a guarded switch. It shall be identified as "Normal" (down position) and "Override" (up position).
- A control unit shall be located in the driver's compartment to adjust the interior temperature. The range shall be from 68 to 76°F. It shall be labeled appropriately. The unit shall have the capability of displaying the interior, exterior and control setting temperatures. LED mode indicator lamps, located at the rear control box shall be visible without removing the cover.

5.3.7.3 AIR FLOW

5.3.7.3.1 Passenger Area

The cooling mode of the interior climate control system shall introduce air into the coach at or near the ceiling height at a minimum rate of 25 cubic feet per minute per passenger based on the standard configuration coach with full standee load. Airflow shall be evenly distributed throughout the coach with air velocity not exceeding 60 feet per minute on any passenger. Excess airflow shall be directed into the front destination sign area for defrosting and ultimately directed to the top of the windshield through vents in the bottom of the destination sign area enclosure.

The fans shall not activate until the heating element has warmed sufficiently to assure at 70°F air outlet temperature. This shall be accomplished with the use of a J1939 communication link to the engine controls to verify that engine water jacket temperature is sufficient (typically 105°F). Outside airflow may be cut off during initial warm-up, provided no manual manipulation is required.

5.3.7.3.2 Driver's Area

The coach interior climate control system shall deliver at least 200 cubic feet per minute of air to the driver's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shut down 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 driver's feet and legs. Motor(s) utilized for the driver's heater/defroster shall be three-speed (minimum), brushless and manufactured by Ametek. The defroster or interior climate control system shall maintain visibility through the driver's side window. The driver's heat/defroster shall have a minimum capacity of 30,000 BTU capacity. Airflow on medium speed shall deliver a minimum of 500 cubic feet per minute. Velocity at each distribution outlet shall be at least 200 feet per minute.

5.3.7.4 AIR INTAKES

Outside openings shall not be provided.

Return air shall be filtered before discharge into the passenger compartment. The filter shall meet the ASHRAE requirement for 5 percent or better atmospheric dust spore 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 cleanable and easily removable for service. Air return grill shall be hinged and secured with tamper-proof fasteners. A frame shall be installed just behind the air return grill. This shall hold a disposable media type filter meeting the above requirements. It shall be as large as physically possible to filter all air entering the A/C unit opening. This design must be approved by a Port Authority Representative. Moisture drains shall have traps and shall be located so that they will not be subject to clogging from road dirt.

5.3.7.5 COMPONENTS

The coach shall be equipped with a Thermo-King Intelligair III Series unit or Approved Equal, utilizing an engine belt-driven screw type compressor and an evaporator/condenser unit located at the top rear of the coach. The compressor shall not be located below the floor level of the coach. The HVAC system shall utilize R407C as the refrigerant. Freon fittings on the compressor shall utilize 3/8" fittings to differentiate them from Port Authority's standard R22 with ¼" fittings. Flexible lines running from the compressor to the A/C unit shall be constructed from a convoluted stainless steel inner core and shall include a braided stainless steel jacket. The same type of flexible line shall be used for both the discharge and suction sides of the compressor. Electric

motors for the evaporator and condenser fans shall be manufactured by Reliance or Approved Equal and be brushless. Defroster, underfloor, floor, underseat or auxiliary heater motors (if utilized) shall be manufactured by Ametek or Approved Equal and be brushless. The water pump shall be a brushless/sealess 24V Ametek model #011403 or Approved Equal.

The HVAC unit shall have pressure transducers installed in both suction and discharge lines to permit electronic monitoring of system pressures without accessing the Freon system. System Freon pressures shall be queriable over the J1939 network.

A secondary diagnostic port shall be included in the rear of the HVAC unit, accessible from the rear of the bus.

All components shall have the approval of a Port Authority representative.

5.3.8 RADIO AND PUBLIC ADDRESS SYSTEM

Manufacturer shall supply and install the following equipment.

5.3.8.1 SYSTEM OVERVIEW

5.3.8.1.1 Unit Identification

Motorola CDM1550 Radio with Flash Port update and GEStar ID with each push-to-talk (PTT) on the operators handsets.

5.3.8.2 MOBILE RADIO

5.3.8.2.1 Mobile Radio Detail

The radio shall be a Motorola CDM1550 with Flash port activation, remote mount 450-512 MHz. The radio shall be remote mount configuration placing the chassis separate from the control head. The radio shall operate in the conventional mode with CTCSS GeStar format. All radios shall be programmed to an ANI code of 5000. The radio shall be field, software programmable without opening the case. The radio personality PROM shall be programmed using an IBM (or compatible) laptop PC and programming kit provided under this contract. Along with analog voice, the radio shall offer digital technology as an internal option. Mobile data is required. The basic operational mode shall be with fixed end dispatch locations and mobile units operating or dedicated radio channels in the 450-512 MHz range. Conventional operation shall provide communications between conventional repeater sites using continuous tone coded squelch (CTCSS) standard EIA tones in the range of 67.0 to 210 Hz. The mobile radio interfaced with the control head shall be capable of multi frequency operation.

5.3.8.2.2 General Requirements

Each mobile radio unit shall be supplied completely functional including mounting bracket, handset, and cradle hook switch with magnetic CTCSS GeStar Guard monitor switch.

5.3.8.2.3 Antenna Requirements Sinclair Excalibur 321A (458Mhz)

The antenna shall be mounted in the center of the roof near the front of the vehicle. A silicone RTV sealer shall be used to seal and weatherproof any holes that penetrate the interior. If self-tapping screws are to be used for the mounting of the antenna, they shall be appropriately sized for diameter and length.

5.3.8.2.3.1 Ground Plane

If the roof of the vehicle is constructed of fiberglass or other non-metallic material, a ground plane must be constructed. This ground plane must consist of an area of at least 18 inches by 18 inches square, securely fastened to both the roof and the antenna mounting hardware.

5.3.8.2.3.2 Inspection Plate

An inspection plate or access opening 6 inches by 6 inches shall be provided in the ceiling of the bus. Distance from the ceiling to the antenna connector shall be at least 2.5 inches. This spacing is to provide the connector with adequate room so as not to place unnecessary bending of the cable at the connector.

5.3.8.2.3.3 Cable Raceway/Conduit

A conduit with a one-inch diameter shall be installed within six inches of the antenna connector termination to allow protection to the antenna cable/wire to the radio enclosure. This requirement for the antenna conduit may be deleted from the sidewall to the radio enclosure, if the antenna wire is placed in a suitable wire channel.

5.3.8.2.3.4 Coaxial Cable

The antenna coaxial cable shall be routed down from the ceiling area to the radio box through a properly sized hole. The connection to the antenna and radio shall be appropriately matched gender connectors. There shall be no adapters or reducers installed in the antenna cable system. The antenna cable shall be RG58U. The connectors installed on the antenna cable shall be properly installed according to industry standard practices.

5.3.8.2.4 Radio Installation

The contractor will make provisions for installation of the radio equipment which will be provided and installed by the contractor prior to delivery and before final acceptance. Port Authority shall approve installation.

5.3.8.2.5 Radio Enclosure

A metal enclosure radio box with minimum dimensions of 15 x 6 x 22 inches shall be provided. A four-inch hole to the rear of the radio box shall be provided to allow access for the radio control cable and antenna wire/cable. A method of covering the four-inch hole shall be provided so not to place undo stress on the cabling. There shall be no sharp or rough edges to the radio box. The four-inch hole in the radio enclosure shall have a grommet or flexible grommet edging material around the opening.

5.3.8.2.6 Radio/Equipment Wiring

The radio box shall have a terminal block or other approved method of connecting a minimum of five ring terminal connectors. Two of the terminals shall be sized for AWG 10 stranded wire. The terminal strip shall be pre-wired for three voltage sources providing a nominal 12-volt dc vehicle supply.

- voltage source shall be a dedicated, unswitched protected 30 Amp source. The source shall be dedicated with no other branch circuits off the breaker. Cabling shall be AWG 10 stranded wire.
- voltage source shall be unswitched protected 5 Amp source. The source shall be dedicated with no other branch circuits off the circuit breaker. Cabling shall be AWG 18 stranded wire.
- voltage source shall be switched from the vehicle master switch protected 5 Amp source. The source shall be dedicated with no other branch circuits off the breaker. Cabling shall be AWG 18 stranded.
- common vehicle ground connection consisting of AWG 10 stranded wire shall be terminated at the terminal strip.

All supply sources shall be dedicated whereas no other electrical circuits shall be branched or tapped off the source. All circuit breakers for the voltage sources shall be marked and easily identified. The vehicle ground connection shall run directly to the vehicle electrical bus bar.

5.3.8.2.6.1 Prototype Test

Prior to the initial delivery, one complete operational mobile radio unit shall be delivered to Port Authority for evaluation. The evaluation shall consist of placing the mobile radio unit in revenue service for a minimum of two weeks. System and equipment parameters tested shall include:

- all parameters listed in Section 5.3.8
- total compatibility with the existing system
- compliance with applicable EIA standards

All cables, connectors and applicable operating system shall be included. Upon successful completion of the Prototype testing, delivery of the units shall occur.

5.3.8.2.6.2 Public Address System (PA)

A Public Address System that enables the driver/operator to audibly address passengers both inside and outside the bus shall be provided. Inside speakers shall allow the audio to be delivered in a clear tone, distributed equally from all seat positions at the same relative volume level. An audio output level control shall be provided at the PA amplifier to allow the driver/operator control of the level. A three-position selector switch shall be provided utilize interior, exterior or all speakers. The level control and speaker selector switch shall mounted on the dash and clearly labeled. The power amplifier of the system shall be adequately sized to provide an equal distribution of the audio throughout the vehicles speaker system.

5.3.8.2.6.3 Outside Speaker

The outside speaker shall be weather proof and constructed of PVC plastic or other non-corrosive material. The speaker shall either be protected from weather and road splash as much as practicable and mounted flush to the vehicle body or concealed. If the speakers are concealed, the audio dispersion shall be so that the announcement can be heard without any baffling or distortion. Mounting location and speaker quality requires approval by Port Authority

5.3.8.2.6.4 PA Microphone

The PA microphone shall be mounted on a 1-3/4" mounting flange base secured to the dash area. The location of the microphone flange shall be determined where normal daily use will not cause stress to the dash material and cause breakage. The microphone shall have a spring-loaded push to talk switch to activate the system. The microphone shall be SHURE model 515SB-G18 or Approved Equal. An additional external microphone jack shall be provided in a close proximity to the PA amplifier controls. The external jack shall be industry accepted such as an XLR jack. The Authority Engineer shall approve the installation.

5.3.8.2.6.5 Radio Personality

The mobile radio channel information shall be determined by programming. The radio will be programmable through the radio universal device connector. The channels/frequencies to be programmed are:

CHANNEL	TRANSMIT	RECEIVE	CHANNEL GUARD	ALPHA NUMERIC	STE	CCT
1	458.0500	453.0500	192.8	EMERGENCY	ON	ON
2	458.3000	453.3000	192.8	W. MIFFLIN	ON	ON
3	458.6000	453.6000	192.8	E. LIBERTY	ON	ON
4	458.5000	453.5000	192.8	COLLIER	ON	ON
5	458.2000	453.2000	192.8	ROSS	ON	ON
6	457.6500	452.6500	192.8	HARMER	ON	ON
7	453.0500	453.0500	192.8	EMERG TA	ON	ON
8	453.3000	453.3000	192.8	W. MIFF TA	ON	ON
9	453.6000	453.6000	192.8	E. LIB TA	ON	ON
10	453.5000	453.5000	192.8	COLLIER TA	ON	ON
11	453.2000	453.2000	192.8	ROSS TA	ON	ON
12	453.650	453.650	192.8	HARMAR TA	ON	ON

CCT set for 1:00 minutes
System ground; negative

5.3.8.2.6.6 Computer and Programming Software

Separate programming software shall be required to modify the radio personalities, diagnostics, and options. The programming software shall work on an IBM compatible PC using Windows 95 or higher, equipped with three drives, one floppy, one hard drive, and one compact disk (CD). The programmer (computer or laptop) shall be capable of cloning (copying) existing personalities from one radio to another as well as sorting the

files to disc. The programmer (computer) shall be capable of providing a written copy in English of the radio personality showing all program features. The radio manufacturer shall make available revisions of the software/hardware if required to maintain the compatibility of new radios with previous radios of the same model. The computer or laptop and programming software shall be provided.

5.3.8.2.6.7 Maintenance Manual

Twelve (12) sets printed and five (5) sets in electronic format of complete and comprehensive instruction manuals shall be provided for the applicable radio model. The manual shall provide sufficiently concise information to include but not limited to schematics, troubleshooting diagrams, layout drawings, printed circuit board overlays, test and alignment procedures, interconnection diagrams, and replacement parts information.

5.3.8.2.6.8 Replacement Parts

The manufacturer of the radio shall maintain a replacement department. Replacement parts shall be made available for ten years at a parts depot located in the contiguous US. A detailed parts list has be provided with manufacturer recommended spares parts and complete price list.

5.4 SYSTEM SUPPORT SERVICES

5.4.1 GENERAL REQUIREMENTS

This Section establishes the requirements for contractor supplied services in support of the purchase of transit coaches. These services shall be provided prior to, during, and after delivery of vehicles to Port Authority. System support services include, but are not limited to education/training, publications, field service engineering, spare parts, special tools and equipment for maintenance, fault diagnosis, and testing.

5.4.2 EDUCATION AND TRAINING

5.4.2.1 GENERAL

The Contractor shall provide a technical educational program for Port Authority employees to include: Bus Maintenance Training Coordinators, Managers, Maintenance Supervisors, and Maintenance hourly personnel. Training provided will be of a quality and depth sufficient to permit satisfactory deployment, use, servicing and maintenance of the vehicles furnished. The training program shall include formal and informal instruction with extensive use of videos, power point presentations, models, mock-ups, samples,

manuals, cutaways, diagrams, parts catalogs, schematics, wall charts and other training aids.

The Contractor shall assume that Port Authority has no knowledge of the features of the buses and shall design the education and training program to bring the level of knowledge to a level fully adequate for the successful deployment, operation, and maintenance of the buses. The Contractor may assume that Port Authority personnel have the basic skills pertinent to their crafts. The Contractor's approach to this effort shall be based on the assumption that its own interests, immediate and long-term, are best served by a satisfactory program. All courses of instruction shall be presented in the English language. Training shall be conducted in three phases.

Phase I training shall be presented to coincide with delivery of the first bus, and shall be designed to familiarize Port Authority Operating Instructors, Dispatchers, Road Operations Personnel, Maintenance Supervisors, Fleet Maintenance Staff, Service Vehicle personnel and Tow Truck operators so that they are proficient in the operation, servicing, and periodic inspection of the advanced design buses, to the extent that they may provide the instruction and training to Port Authority Operators and Equipment Service Personnel not involved in the Contractor's training courses.

Phase II of instruction shall include in-depth training oriented to the understanding the operation of bus subsystems, preventive and corrective maintenance, and heavy repair. Training shall include steps to measure and determine the proficiency of the students. Course review forms shall be given at the end of each session in order to evaluate both the material presented, and the overall comprehension of this information by the participants. OEM instructor shall be utilized for training of specific major components, i.e., engine, transmission, A/C, wheelchair ramp, destination sign, radio, stop announcement system, video surveillance, etc.

Phase III of instruction will include in-depth training on the overhaul of the engine and transmission. OEM instructors shall be utilized for the development and delivery of this training

5.4.2.2 TRAINING PLAN

The Contractor shall submit to Port Authority, for approval, an outline of the education and training program designed in accordance with the Technical Specifications. The Contractor shall communicate with and coordinate this outline with Port Authority's Manager of Bus Maintenance Training and selected Bus Maintenance Training Coordinators prior to final approval.

The program shall provide for formal classroom instruction, and a period of time to perform actual maintenance functions with a "hands-on" training methodology in an on-coach environment within the shop environment.

Port Authority's Operating Instructors, Maintenance Supervisors, Fleet Maintenance staff, Service Vehicle personnel and Tow Truck operators shall be exposed to the depth of detail during **Phase I** instruction that is oriented to coach operation, servicing, road-call trouble analysis, and corrective maintenance operations. The students shall be allotted adequate time for on-coach instruction utilizing the earliest delivered coaches as training aids.

Phase II instruction shall be oriented to the performance of scheduled (preventive) and unscheduled (corrective) maintenance operations. The students shall be allotted adequate time for performing the more complex maintenance operations on a bus in a shop environment in addition to learning troubleshooting techniques using sub-system diagnostic test devices.

The depth of **Phase III** training shall include details in the performance of heavy repair and the rebuilding/overhauling of engine and transmission units.

5.4.2.3 TRAINING SCHEDULE

The Contractor shall submit for Port Authority a tentative schedule for training within 30 calendar days after the contract award. All **Phase I** training shall be completed within twenty (20) working days of the acceptance of the first coach delivered. All **Phase II** training shall be conducted concurrent with coach delivery to the maximum extent practicable. All **Phase III**, engine and transmission overhaul, instruction will be scheduled at the discretion of the Port Authority's Maintenance Training Department to be completed on or about 90 days prior to the first of each unit coming out of warranty.

It is Port Authority's desire that all **Phase II** Training be completed within one (1) calendar year after delivery of the first coach. Classes shall be scheduled on a forty (40) hour week basis, eight (8) hours per day, five work days per week (Monday - Friday). All holidays observed by Port Authority shall be observed by the Contractor. The Contractor's Instructor(s) shall be available to provide training on all three Port Authority maintenance shifts: 8:00 a.m. to 4:30 p.m., 4:00 p.m. to 12:30 a.m., and 12:00 a.m. to 8:30 a.m. The Contractor's Instructor shall be available, upon request, to provide training during the weekend (Saturday, Sunday).

For purposes of planning and scheduling, each "Session" shall be (8) hours in length, unless noted otherwise All courses of instruction shall have a length commensurate with the material required for in-depth presentation. Class instruction periods shall normally be fifty (50) minutes in duration, with a ten minute recess between periods of instruction. Length of practical on-coach application periods is not fixed. Normally, all training will be conducted in Port Authority facilities at one of five bus divisions (Ross, Collier, Harmar, West Mifflin, and East Liberty) or at Port Authority's Main Shop Facility at Manchester.

The maximum class size will be fifteen (15), unless prior approval is granted by Port Authority's Manager of Bus Maintenance Training. All training shall be scheduled jointly by Port Authority's Bus Maintenance Training department and the Contractor.

The following matrix is a recommended minimum training period identifying courses, course hours, major topics, total sessions and total hours required. The Port Authority will submit the total number of students to be trained, prior to training beginning, at the request of the Contractor. Port Authority reserves the right to change the number of sessions in order that the maximum benefit of the training is achieved.

Training Plan Table

	Course	Description	Target Audience	Length (Hrs)	# of Sessions	Training Hours
Phase I Training	Class #1 Bus Familiarization	Class will cover driver familiarity, operation and CDL pre-trip requirements for the safe operation of the vehicle.	Driving Instructors, Dispatchers, Road Operations and Fleet Maintenance Personnel	4	6	24
	Class #2 Bus Servicing	Class will cover fluid types, fluid quantities, fluid level checks (manual and electronic), fill ports and basic servicing of bus.	Road Operations, Tow Truck Operators, Service Vehicle Personnel, and Fleet Maintenance Personnel	4	2	8
	Class #3 Preventive Maintenance and Bus Familiarization	Class will cover the inspection and maintenance of fluid types, fluid quantities, fluid level checks (manual and electronic), fill ports, filters and basic servicing of bus to include PM schedules. Class will also cover familiarity of vehicle for safe operation.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	8	32	256
Phase II Training	Class #4 Coach Electrical	Class will cover the inspection, location, troubleshooting, maintenance and repair of alternator, regulator, over voltage monitor, battery equalizer, battery maintenance, print reading, DINEX system, ladder logic, wiring color coding, harnesses, connectors, plugs, J1939 communication circuit.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	16	32	512
	Class #5 Air Brakes and Air Systems	Class will cover the inspection, location, troubleshooting, maintenance and repair of air lines, valves, compressor, air dryer, tanks, plumbing diagrams, electrical interface, kneeling system and air suspension.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	8	32	256
Phase II Training (Continued)	Class #6 HVAC/Webasto	Class will be provided by OEM and will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of the HVAC/Webasto system to include: compressor, evaporator/condenser fans, motor drivers, recovery/recycling refrigerants, system operation, Intelligaire (to include diagnostic software), bus interface electrical and mechanical drawings.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (3 sessions at each garage)	8	15	120
	Class #7 Suspension, Chassis, Axles and Differential	Class will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of Suspension, Chassis, Axles and Differential systems.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	8	32	256

	Class #8 Wheelchair Lift/Ramp	Class will be provided by OEM and will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of the wheelchair lift/ramp to include bus interface electrical and mechanical drawings.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	8	32	256
	Class #9 Transmission (Maintenance, Servicing and Troubleshooting)	Class will be provided by OEM and will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of the transmission to include transmission, valve body, wiring, sensors, performance testing, bus interface electrical and mechanical drawings, and diagnostic software.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	8	32	256
	Class #10 Engine (Maintenance, Servicing and Troubleshooting)	Class will be provided by OEM and will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of the engine to include wiring, sensors, bus interface electrical and mechanical drawings, performance testing and diagnostic software. Class will also include tune-up procedures.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	8	32	256
	Class #11 Fuel and Cooling	Class will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of fuel and cooling system, fuel tank, check valves, delivery, pick-up, hydraulics, fan, charged air cooling system, general plumbing, valves, etc...	Mechanics/Repairpersons and Fleet Maintenance Personnel. (6 sessions at each garage and 2 sessions at Manchester)	4	32	128
	Class #12 Body and Structures	Class will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of coach assembly, door adjustments, fasteners, repairs, major repairs, windows, seat adjustments, interiors, doors, under-floor heater boxes, etc...	Mechanics/Repairpersons and Fleet Maintenance Personnel. (3 sessions at each garage and 2 sessions at Manchester)	8	17	136
	Class # 13 Radio Equipment	Class will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of for exterior route signs, stop announcement system, video surveillance system, radio, and public address system. Training shall also include, at a minimum, preventive maintenance, troubleshooting and replacement to the unit level, coach wiring, interface and termination locations. Training on all electronic and microprocessor based diagnostic tools provided under this contract.	Radio Repairpersons	[4]16	2[4]	32
	Class #14 Electronic Equipment	Class will cover the inspection, location, troubleshooting, maintenance (preventive and corrective) and repair of exterior route signs, stop announcement system, video surveillance system, charging equalizer, wheelchair lift control, radio, and public address system. Training shall also include, at a minimum, preventive maintenance, troubleshooting and repair to the component level. Training on all electronic and microprocessor based diagnostic tools and or test stands provided under this contract.	Electronic Maintainers	16[4]	2[4]	32

Phase III Training	Class #15 Transmission Overhaul	General construction and principles of operation. Description and operation of torque converter assembly, planetary gear sets, clutches, retarder, vehicle interface, and the hydraulic and electronic control systems. Assembly and disassembly procedures.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (2 sessions at Manchester)	40[4]	2[4]	80
	Class # 16 Engine Overhaul	General construction and principles of operation. Fuel, air, lube and cooling systems; governors and other fuel control devices, overhaul procedures, tune-up and troubleshooting. Assembly and disassembly procedures.	Mechanics/Repairpersons and Fleet Maintenance Personnel. (2 sessions at Manchester)	40[4]	2[4]	80

5.4.2.4 TRAINING AIDS

Training Aids for all classes shall consist of the following minimum essential media:

- Operation and maintenance manuals, parts catalog manual, and wiring diagrams and/or schematics.
- Handouts and power point presentations that illustrate sub-assemblies showing component locations, component cutaways, schematics, and wiring diagrams. Viewgraphs depicting hydraulic, pneumatic, and air conditioning systems shall include direction of flow for the particular medium.
- Cutaways, to be used for engine and transmission unit overhaul training.

Proper nomenclature for all components shall be applied and shall be in accordance with the terminology used on schematics and wiring diagrams incorporated in operating and maintenance manuals.

Illustrations, drawings, diagrams, charts and tables to be used by an instructor during the courses shall be prepared in the form of a visual display that can be readily seen by a student at a minimum distance in an ambient light condition that permits student reference to a similar, but smaller, illustration. Generally, these restrictions imply that such training aids be power point presentations, projected by appropriate equipment, or large charts and/or posters prepared for wall or easel mounting.

The content and format of audio-visual aids used in the training courses, or provided with the training equipment, must be approved by Port Authority.

The Contractor shall make corrections and improvements to the audio-visual aids during the conduct of the course when examinations, tests, or instructor observations indicate that a majority of students fail to attain the learning objectives.

Suitable protective covers shall be provided for each audio-visual aid master reproducible.

Proper nomenclature for all components shall be applied, and shall be in accordance with the terminology used on schematics and wiring diagrams incorporated in operating and maintenance manuals.

Contractor will provide once complete copy of all training materials, such as texts, audio-visuals, training aids, and lesson plans, prior to the facilitation of each course. These materials will become the property of Port Authority. The Contractor shall be responsible for the condition of these materials (if they are those materials used in the facilitation of the course), for the duration of the training program, and shall replace all damage resulted from neglect or misuse by the Contractor or Port Authority.

The Contractor shall provide to Port Authority one (1) Multiplexing or PLC Training Simulator Aid, which will become the property of Port Authority at the end of the training program. The simulator must be a complete functional replica of the system used on the purchased vehicle.

The Contractor shall provide one (1) operational engine and transmission on a stand instrumented for trouble shooting which will become the property of Port Authority at the end of the training program. The unit shall include electrical instrumentation and controls. The unit shall also include gauges mounted on engine and transmission test points.

Lesson Plans shall be updated as required during the course of instruction.

5.4.2.5 CLASSROOM INSTRUCTION

Classroom instruction shall inspire the respect of all students. Instructors shall have qualified themselves fully for their presentation. Qualifications will be considered to be adequate when:

A. The Designer of the system is the instructor, and he/she has the desire and abilities to communicate the facts about the system to others in understandable terms; or...

B. When the instructor has been trained in teaching methods and has familiarized himself/herself fully with the subject matter.

In all cases, lesson plans shall include an outline of the material to be presented and a list of the training aids to be used.

Training Aids shall include actual samples of manually operable devices and working samples of devices, the functions of which can be displayed without dismantling the device. The workings of other significant components shall be illustrated with diagrams, cutaway views, etc., displayed with sufficient scale and clarity to permit all to see clearly as specified in Section 8.2.4.

Wiring Diagrams, when used as training aids and reference material, shall be divided to facilitate comprehension. There shall be single line functional diagrams of systems and schematic diagrams of each component within the system. Where parts are identified by

initials or reference numbers, there shall be a key on the same sheet to permit precise identification.

Classroom instruction shall include not only the anatomy and functioning of the parts under discussion, by the essentials of their routine care, including lubrication schedules, materials, Contractor's recommendations for test frequency, tolerance limits, and methods for testing, including instruments required (when applicable). When methods of access, removal, dismantling, or application are not self-evident to a reasonably intelligent individual, the instruction shall cover these materials. Overhaul procedures need not be included during the instructional phase oriented to routine maintenance operations.

The locations and times of sessions shall be at the convenience of Port Authority. Port Authority shall provide a reasonable amount of assistance in the movement of equipment, apparatus, etc., within its own property and it will furnish suitable furniture (desks, tables, chairs, lecterns, etc.). When instruction in courses is conducted requiring the use of buses as training aids, Port Authority will facilitate movement of the bus for the instruction.

The Contractor shall supervise all classes. When audio-visual methods of instruction (videos, power point presentations, etc.) are required, there shall be a competent individual present to answer questions on the material presented.

5.4.2.6 FIELD INSTRUCTION

The extent of instruction in the Contractor's and any/all sub-Contractor's shops shall be at the discretion of Port Authority. Port Authority may request access to these shops for a limited number of supervisory and technical personnel to familiarize them with assembly methods. The Contractor shall make a reasonable effort to comply with such a request, but not to the detriment of production. Similarly, Port Authority Operating Supervision shall be granted access to all equipment for the purpose of familiarization.

5.5 PUBLICATIONS, CATALOGS, AND DRAWINGS

5.5.1 GENERAL

The publications shall be designed for continuous, long term service and employ a loose leaf design which shall accommodate revisions to the manuals. All covers shall be heavy-duty, resistant to oil, moisture, and wear to a high degree commensurate with their usage. Line drawings required are to be reduced in size. Six weeks after notice to proceed (NTP) the Contractor shall deliver two (2) basic maintenance, parts, and operator's manuals to Port Authority. These manuals should represent the Contractor's standard bus in the general configuration that Port Authority has ordered. The manuals will familiarize Port Authority with the Contractor's vehicle and with procedures for operation and maintenance. Additionally, Port Authority will review the manuals for format, quality, clarity, and completeness. Information from this review will be given to the Contractor to assist in the formulation of the final customized manuals. The manuals, along with the manufacturer's recommended spare parts list and the vendor cross reference list, will also assist Port Authority in ordering parts, to assure that Port Authority will have necessary inventory prior to delivery of the Production buses.

A preliminary Bill of Materials (build list)/vendor cross reference list, recommended spare parts list, and a recommended tool and equipment list shall be supplied as soon as available but prior to delivery of the pilot bus for initial review. A final Bill of Materials (build list)/vendor cross reference list shall be supplied six months from the date the pilot bus is approved or with the delivery of the last bus, whichever comes first.. This information is to be supplied on an electronic format capable of being viewed using Microsoft Office 2003 or Adobe Acrobat software.

The final customized maintenance, parts, operator's manuals (specific to Port Authority's buses), and all required drawings shall be delivered six months from the date the pilot bus is approved, or with the delivery of the last bus of the original order, whichever comes first. Payments will be withheld for failure to deliver printed or electronic media according to this schedule or other dates as listed in the specification. *See appropriate paragraphs in the CIP portion of the specification for specific details.*

Also, all material contained in all manuals shall be placed on electronic media, i.e. computer software or equivalent, shall be menu driven and generally follow the paper manuals. The electronic data must be compatible with the Authority's computer software program. Details of the Authority's computer system will be presented to the successful bidder at the Engineering Design Review Meetings.

All publications, manuals, drawings, and catalogs shall be shipped to the address given in Section 5.5.3.6.

5.5.2 MANUAL ORGANIZATION

The coach shall be treated as a whole and not as a grouping of disassociated parts. The material in all manuals and the parts catalogs shall be similarly organized and indexed in accordance with the following numbering system:

01	-	Front Axle
02	-	Rear Axle
04	-	Brakes and Air System
05	-	Wheelchair Loading Device and Safety Accessories
06	-	Cooling, Engine
07	-	Electrical and Instruments
08	-	Engine
10	-	Hydraulic System
11	-	Frame
12	-	Fuel, Intake and Exhaust
13	-	Lubrication
14	-	Air Suspension
16	-	Steering
17	-	Transmission
18	-	Propeller Shaft
19	-	Wheels and Tires
20	-	Standard Hardware
24	-	Body
26	-	Heating, Ventilation and Air Conditioning

The maintenance and parts manuals shall be written in such a way as to present a clear and adequate explanation and illustration of their respective subjects. The maintenance and parts manuals shall be in loose leaf pin binder form. The page size shall be 8 ½ x 11 inches and on good quality paper. Folded pages will be permitted where the information cannot be contained on a single 8 ½ x 11-inch page. Pages shall be secured in the binder along the eleven-inch page dimension. Required diagrams, illustrations, and drawings shall not be loose or in binder pockets. All printed material shall be clearly reproducible by dry copying machine. Halftone illustrations are not acceptable.

5.5.3 DOCUMENTATION

All drawings, publication, catalogs and manuals including Training Materials required under this Specification shall be furnished in electronic form in addition to the form

specified elsewhere in this Specification. Electronic versions of these documents shall be furnished concurrent with their submittal in hard copy form. The drawings shall be furnished in an electronic format compatible with the latest version of AutoCAD. Catalogs, publications manuals, lesson plans and training materials shall be furnished in the Adobe Acrobat electronic (both authoring and PDF) format. Two (2) sets of all documents in electronic format shall be provided.

Original authoring electronic format files shall be adjusted for pagination to mirror published versions using Acrobat Distiller settings so when a PDF file is created, the end result will be a matched copy. Each file shall contain one section of the manual. Bookmarks shall be included based on the subsections found within the file and linked to the associated information. All PDF files shall remain unlocked. File sizes must be kept to a minimum. To control file sizes, distillation settings for the Acrobat Distiller should be set to 300 DPI to produce files that are both optimized for Port Authority web/intranet use and still retain the ability for clear printing from a desktop printer. All text within PDF files shall be searchable and capable of indexing within the Adobe programming environment.

It is the Contractor's responsibility to secure and make whatever agreements are required to transfer component text and drawings to electronic media. When electronic media is delivered as part of this Contract, the Contractor shall supply the information with a site license agreement with no limitation(s) for reproduction or use by Port Authority within usual business practices.

5.5.3.1 OPERATORS MANUAL

The manual shall contain all information needed for the operation of the vehicle. Manuals shall be coach specific, and shall include general vehicle familiarization material, location, function, and operation of all controls, gauges, indicators and switches; emergency procedures; trouble symptoms and diagnosis methods; safety devices and precautions. Two thousand (2000) manuals shall be provided.

5.5.3.2 MAINTENANCE MANUALS

The manuals shall be coach specific. The manuals shall contain complete data required for routine, periodic maintenance and heavy repair maintenance of all parts of the bus, including but not limited to the following:

a. General description, including specifications, dimensions, fluids (with capacities).

b. Trouble-shooting guide covering all mechanical, electrical, and electronic components (Including Air Conditioning).

c. Preventive maintenance, lubrication, and adjustment requirements.

d. Wiring and schematic diagrams and schedules for wire and cable sizes and ratings, plus locations in the bus, of electrical and electronic components, including electronic engine and transmission components and air conditioning.

e. Air and hydraulic system diagrams showing locations in the bus of air and hydraulic components.

f. Detailed, illustrated procedures for all component change-out and rebuilding, plus servicing, adjusting, testing, and run-in information.

g. Body and structural information and material specifications for major accident repairs.

The manual shall contain a detailed analysis of each subsystem or major component of the coach so that maintainers can effectively and safely inspect, troubleshoot, adjust, service, repair, replace, maintain, and overhaul the coach. The manual shall be coach specific. Fifteen (15) manuals shall be provided. Thirty (30) additional copies of the manual shall be produced with laminated pages.

Fifteen (15) component specific maintenance manuals i.e.; engine, transmission, air conditioning, wheelchair ramp, destination sign, etc., shall be provided by the OEM for the appropriate unit as installed on vehicles covered under the contract. Thirty (30) additional copies of these manuals shall be produced with laminated pages. Copyright release shall be provided for component specific manuals to allow Port Authority to copy these manuals.

5.5.3.3 PARTS CATALOG

The catalog shall enumerate, describe, and illustrate every component with its related parts, the Contractor's number, and provisions for entry of Port Authority part numbers. The illustrated parts catalog shall be coach specific. Cutaway and isometric exploded drawings shall be used to permit identification of all parts. Parts common to different components (as for example bolts, nuts and washers) shall bear the Contractor's part number. Each part or component shall be identified as being part of the next larger assembly.

A list of all flexible hoses should be included with the parts catalog. This list shall identify all hoses utilized for air, fluid (oil, water, fuel, hydraulic, etc.) or other substances on the vehicle. The list shall identify the location, length (coupling to coupling), with a detailed description of the type of hose and type of couplings utilized.

A list of all light bulbs utilized on the coach shall be provided. The lamp description (and location) shall be cross referenced to the industry standard designation, the Contractor's part number and the supplier part number.

Fifteen (15) parts catalogs with all the information as required in the preceding paragraphs shall be provided. Thirty (30) additional copies of the manual shall be produced with laminated pages.

Fifteen (15) component specific parts manuals i.e.; engine, transmission, air conditioning, wheelchair ramp, destination sign, etc., shall be provided by the OEM for the appropriate unit as installed on vehicles covered under the contract. Thirty (30) additional copies of these manuals shall be produced with laminated pages. Copyright release shall be provided for component specific manuals to allow Port Authority to copy these manuals.

5.5.3.4 DRAWINGS

Contractor shall submit permanent reproducible of each "as-built" drawings to Port Authority and two (2) sets of prints. These shall include all structural, electrical, plumbing (air and fluid) carpentry, corrosion and sealants, and miscellaneous drawings.

Electrical drawings shall include a master wiring schematic (complete bus electrical system on one page), individual sub-system schematics and wiring diagrams, a harness layout, a junction box layout, detail of all connectors utilized and all components i.e. circuit breakers, relays, diodes, and other electronic parts.

Permanent reproducible drawings shall be high-contrast, silver-sensitized, activator-hardened, moist erasable on a polyester film.

Drawings shall be standardized 22 inches by 34 inches or 24 inches by 36 inches size.

All notations, dimensions and wording shall be in the USA standard system and English language.

Contractor shall provide fifty (50) sets of wiring diagrams (11 X 17 inches) laminated and bound. These shall contain a table of contents, symbol definitions, location of components (circuit breakers, relays, diodes, etc.) and wiring tabulation sheets.

The Contractor shall also furnish drawings for each of the bus windows. These shall show dimensions (with tolerances) of bare glass for the purpose of having replacement glass manufactured.

The Contractor shall furnish drawings of the engine stands listed in the spare parts section of this specification. These drawings shall be of sufficient detail to facilitate the manufacture of additional engine stands if required.

Port Authority shall have the right to use, duplicate or disclose the data, including drawings, required under this contract for any purpose whatsoever and to permit others to do so, except as otherwise stated in this technical specification. If certain data include information that has been patented or copyrighted, or which the Contractor believes includes trade secrets or constitutes confidential or privileged commercial or financial information, Contractor, prior to disclosure, shall identify all such proposed Limited Rights data to Port Authority, along with evidence to support such position.

For data that Port Authority consents to designate as Limited Rights data, Port Authority shall have the right to use, duplicate or disclose Limited Rights data, in whole or in part, with the express limitation that such Limited Rights data shall not, without the written permission of the party furnishing such data:

(a) be released or disclosed, in whole or in part, outside Port Authority;
(b) be used by a party other than Port Authority except for emergency repair or overhaul work, provided that the release or disclosure thereof outside Port Authority shall be made subject to a prohibition against further use, release or disclosure.

The contractor shall mark all such Limited Rights data with a legend which recites that the data is covered by a patent, along with the patent number, a copyright, or is otherwise restricted in accordance with the above.

5.5.3.5 CHANGES AND REVISIONS

Following the publication of each manual required herein, the Contractor shall provide revisions covering any changes, whether required by change of design or procedures or due to error, and these revisions shall be kept current during the entire basic warranty period. Manual revisions shall be furnished to Port Authority before or coincidental with the arrival of any altered parts or components. Upon expiration of the basic warranty period, revisions shall be furnished to Port Authority, free of charge, as required until the bus is twelve (12) years old.

5.5.3.6 PARTS CROSS REFERENCE LIST

The Contractor shall furnish a complete bill of materials of all parts/components used in the assembly of the bus. This list shall include, as minimum, bus manufacturer's part number, part name, name of original part manufacturer and this manufacturer's part/identifying number. The Contractor shall also furnish drawings for each of the bus windows. This information is to be supplied on an electronic format capable of being viewed using Microsoft Office 2003 software. At least five (5) copies of the parts cross-reference list must be shipped to:

Port Authority of Allegheny County
ATTN: Material Control
2235 Beaver and Island Avenues
Pittsburgh, PA 15233

5.5.3.7 SERVICE BULLETINS

Twenty (20) sets of coach service bulletins shall be provided by the Contractor. Paper size shall be 8½ x 11 inches and contained in pin binders. Updates and revisions shall be provided at no cost to Port Authority and shall be provided over the 12-year life of the vehicle. Bulletins shall be mailed to the address listed under section 5.5.3.6 of this specification.

5.5.4 FIELD SERVICE SUPPORT

5.5.4.1 GENERAL

The Contractor shall have a competent engineering staff available to assist Port Authority in the solution of engineering or design problems within the scope of these Technical Specifications that may arise during the expected 12-year service life of the vehicles.

5.5.4.2 FIELD SERVICE ENGINEER

The Contractor shall have competent technical personnel available to assist Port Authority in any problem which Port Authority might have on the buses, after delivery, at no additional cost to Port Authority. This does not relieve the Contractor of responsibilities under the Warranty Provisions of Section 4.0. The Contractor's field service engineer shall be capable of performing adjustments to each bus as required during the warranty period and providing technical support to Port Authority during revenue service operations. Such personnel shall be available to perform these tasks within twenty-four hours after being requested to do so by Port Authority at no additional cost to Port Authority.

5.6 SPARE PARTS

5.6.1 GENERAL

The Contractor shall guarantee the availability of replacement parts for the acquired coaches for at least twelve (12) years after the date of acceptance of the last coach delivered to Port Authority. Contractor must supply parts within 30 days from the date the order is placed. However, parts ordered for a "vehicle down" shall be supplied within two working days after the order is placed. Failure to supply parts according to the contract may cause the Contractor to be barred from submitting future bids. Spare parts shall be interchangeable with the original equipment and shall be manufactured in accordance with the highest quality assurance practices in the industry. Spare parts shall be obtainable through commercial distribution channels to the maximum extent practicable, minimizing captive sole-source distribution practices.

5.6.2 RECOMMENDED SPARE PARTS LIST

The Contractor shall prepare and furnish to Port Authority a recommended and/or suggested spare and replacement parts list. This listing will become a working document to be used by Port Authority in the procurement of spare and replacement parts. The spare and replacement parts list shall group parts by the sub-system of the vehicle system. The listing for each item shall give complete ordering and procurement information for that item. Long lead-time items shall be specifically noted. Each item listing shall contain at least the following information: item name, description, rating, price, manufacturer's name, part number, lead-time and drawing reference number. Items that are common to more than one (1) sub-system shall be suitably cross referenced. The Contractor shall recommend the absolute minimum essential quantity of spare parts required to perform normal routine maintenance and to maintain the operation of the fleet, assuming standard failure rates of component units. The Contractor shall state the expected failure rate of major components to the extent practicable.

The Spare Parts List shall be delivered at least 60 days prior to the delivery of the first production bus in electronic spreadsheet form. Spare Parts List shall be provided periodically as new information becomes available for the duration of the production run(s). A preliminary Spare Parts List will be provided with or before acceptance of the Pilot Bus.

5.6.3 MAJOR COMPONENT PACKAGE

The components listed below shall be included and delivered with the first bus as part of the contract. The major components shown shall be delivered with all accessories. These shall include but not be limited to; sub-components, electronic processors (ECU's, ECM's, etc.) and interconnecting wiring harnesses. The delivered components shall include all parts that the Contractor utilized to install and make the component operable.

Complete engine (built-up on a shipping skid and ready to install*)
Quantity: Ten percent (10%) of total coaches delivered

Complete transmission
Quantity: Ten percent (10%) of total coaches delivered

Complete radiator assembly
Quantity: Ten percent (10%) of total coaches delivered

Complete Engine Emissions Exhaust Aftertreatment Systems
Quantity: Ten percent (10%) of total coaches delivered with a minimum of five (5) sets.

A/C compressor
Quantity: Ten percent (10%) of total coaches delivered

Engine cradle stand
Quantity: Ten percent (10%) of total coaches delivered

Complete Passenger Window Set
Quantity: Ten percent (10%) of total coaches delivered

Complete destination sign system
Quantity: Ten percent (10%) of total coaches delivered

Complete wheelchair ramp system
Quantity: Five percent (5%) of total coaches delivered

Complete radio system
Quantity: Ten percent (10%) of total coaches delivered

Complete video surveillance system
Quantity: Ten percent (10%) of total coaches delivered

Complete stop announcement system
Quantity: Ten percent (10%) of total coaches delivered

Complete Radiator Fan Cooling system
Quantity: Ten percent (10%) of total coaches delivered

* built-up and ready to install shall mean, all components (i.e., starter, alternator, air compressor, power steering pump, electrical harnesses, engine oil dipstick, etc.

The major components listed above shall be delivered with all sub-components, accessories, electronic processors (i.e.; ECUs, ECMs, etc.) and interconnecting wiring harnesses. The delivered components shall include all parts that the contractor utilized to install and make the equipment operable.

The quantity of components delivered shall be the percent indicated of the total number of coaches of the type described. The number shall be rounded up to the next highest whole number.

5.7 SPECIAL TOOLS AND EQUIPMENT

5.7.1 RECOMMENDED TOOL LIST

The Contractor shall prepare and submit to Port Authority, a recommended hand, power, diagnostic, and specialty tool and equipment list. This listing will become a working document to be used by Port Authority to plan for the deployment, servicing and maintenance of the acquired vehicles. The list shall identify (describe in detail) all tools required to perform routine and heavy maintenance including the removal and re-installation of all units and component parts utilized on the coaches. Tools and equipment not available through normal commercial distribution channels shall be specifically noted and identified. Contractor to supply manufacturer name and contact person as possible alternative supplier for evaluation and or approval.

The Recommended Tool List shall be delivered at least 60 days prior to the delivery of the first production bus in electronic spreadsheet form. Recommended Tool List shall be provided periodically as new information becomes available for the duration of the production run(s). A preliminary Recommended Tool List will be provided with or before acceptance of the Pilot Bus.

5.7.2 CONTRACTOR SUPPLIED TOOLS AND EQUIPMENT

The Contractor shall deliver to Port Authority concurrent with delivery of the buses twenty (20) sets of special tools. These sets shall include all tools required to maintain the vehicle as required by the coach manufacturer. Additionally, the twenty (20) toolsets shall contain all special tools required to maintain and rebuild sub-components (i.e.; engine, transmission, air conditioning, wheelchair ramp, destination sign, etc.) as required by the OEM Tools not supplied with delivery but found to be necessary and recommended by the OEM for maintaining the vehicle during the warranty/service period shall be immediately provided by the contractor. All tools and tool sets must be inspected and approved by authorized Port Authority Representative.

5.7.3 SPECIAL DIAGNOSTIC EQUIPMENT

Twenty (20) sets of Windows based diagnostic software shall be provided which includes (but is not limited to) Cummins Insight Pro, Voith diagnostic software, I/O Controls – DINEX diagnostic software, Thermo King & Spheros/Webasto diagnostic software. Diagnostic software (which is available) for all other electronic components supplied with the coach shall be included.

Ten (10) "toughbook" style Windows based laptop computers shall be supplied as diagnostic tools for the coach electronic systems. Port Authority must give final approval for the configuration of the laptop computers.

5.7.4 REFRIGERANT RECLAIMATION EQUIPMENT

The Contractor shall supply seven (7) refrigerant reclaim systems as manufactured by Van Steenburgh, Model LV30-2 or Approved Equal equipped with 3/8-inch hoses and refrigerant gauges for use with R-407C and R-134a refrigerants.

5.8 HYBRID OPTION

The contractor shall bid a Parallel Hybrid Drive, or Approved Equal as an option.

5.8.1 ENGINE

(a) The bus shall be powered by a hybrid/diesel propulsion system. Engine shall be a Cummins ISB engine capable of giving satisfactory life and performance in transit service.

(b) Power plant is a complete unit, mounted in the rear, and mountable and de-mountable as a unit, complete with hybrid drive. Engine shall also be removable without disturbing hybrid drive.

5.8.2 HYBRID DRIVE

5.8.2.1 TYPE

The bus shall have a hybrid drive unit, designed to last the life of the bus, which, coordinated with the engine and the rear axle drive ratio, enables the vehicle to achieve the required top speed, acceleration and hill climbing capability while still maintaining passenger comfort and providing a smooth ride. The hybrid drive shall be rated to operate at the GVWR of the bus. Hybrid drive shall be an Allison EP 40 drive system, including: two concentric AC induction motors; two mode compound split parallel architecture with infinitely variable gear rations; dual power inverter module; system controllers and a Ni-MH energy storage and management system. The dual power inverter module (DPIM) and battery pack shall be mounted on the roof of the bus.

5.8.2.2 HYBRID DRIVE DRAIN PLUG

A drain plug of magnetic type attached to rear of oil pan near drain opening is furnished.

5.8.3 HYBRID ELECTRICAL

Operating voltage of the hybrid drive system is 600 to 900 volts. Redundant HVIL (high voltage interlock loop) systems protect all circuits and components. The electrical system provides and distributes power for all electrical components in the bus. The system supplies a nominal 12 volts to incandescent lights and instruments and 24 volts to all remaining circuits. Except for the engine starter circuit, all circuits are protected by circuit breakers or fuses.

Casual contact with components that have a sufficient voltage potential (emf) to cause bodily injury shall not be possible. No passenger, driver, or passerby shall be able to contact such equipment.

For maintenance purposes, all devices that contain high voltage circuits (maximum circuit operating voltages above 50 VDC or 50 VAC) shall be contained within protective enclosures. All access covers for such enclosures and compartments shall be permanently labeled with the "DANGER - HIGH VOLTAGE" signs. Appropriate warning signs and labels shall be used to alert maintenance personnel and/or emergency crews to the presence of high voltage batteries and cabling within the bus. High voltage cables and wires shall be installed in the dedicated harnesses, wire conduits, or raceways. High voltage harnesses shall be identified as such by the distinct color markers, tags or other approved method.

5.9 BRT STYLING OPTION

The contractor shall bid a BRT styling package as an option

The BRT styled bus shall be a modern aerodynamic looking, smooth sided, and aesthetically pleasing design.

The front cap shall be a composite material and shall have a single piece windshield glazing that includes an integrated destination sign glass and windshield defroster system. The front cap shall have a left and right front quarter window, with dedicated quarter window wipers for safety and to minimize accumulation of splash and spray. The front roof appearance shall be enhanced by a composite forward roof top fairing to provide an advanced aerodynamic look. The Headlamps shall be of a modern appearance, long life projection beam type. The front turn signals shall be of modern, LED style design, which complements the front headlamps.

The Mirrors shall be Class A type and well suited to enhance and compliment the clean aerodynamic design. The mirrors need to be high mounted, aesthetically pleasing and aerodynamically styled.

The front close out / bumper shall also be of advanced / composite design to complement the front cap, wraparound the front corners of the bus, close out the chassis area and be able to support a bike rack if needed. The bumper and close out assembly needs to compliment the aerodynamic styling of the bus.

The rear of the coach will have a smooth, modern designed; composite body cap shall have an advanced aerodynamic shape that maintains and complements the aerodynamics of the coach.

The rear composite cap will have full opening engine and air conditioning compartment doors with door props suited to support and hold open the compartment doors. The rear appearance shall be further complemented by an aerodynamically shaped upper roof fairing that is opposite in shape of the front faring, maintaining the aerodynamic styling.

The rear tail lamps shall be cluster mounted in a triangular shape with body cladding around the cluster.

The rear tail lamps shall include three lamps, stop, turn and reverse, all of a 4" LED design along with a third center mounted LED brake lamp.

6 SUPPLEMENTAL TECHNICAL SPECIFICATIONS

(j) - Referenced on Agreement Page 2 of 6

60 FOOT ARTICULATED COACHES

6.1. Scope

This supplement is applicable to the 60 foot Articulated transit coaches. The 60-foot coaches shall be built according to the 40-foot specification except for the items contained in this supplement.

The trailer shall be permanently connected to the tractor by a mechanical turntable type articulation system, which shall allow limited horizontal and vertical articulation. Movement in the horizontal direction shall be 35 degrees minimum, 40 degrees maximum. Movement in the vertical direction shall be 11 degrees minimum, 16 degrees maximum. Damage to vehicle must not occur until hinge angles of 40 degrees for horizontal and 16 degrees for vertical, respectively, are reached. Turntable damage shall not result while negotiating a vertical curve up to 16 degrees. A buzzer and warning light (identified on the driver's dashboard as "Hinge Angle") shall operate when the maximum horizontal angel has been reached. If backing is continued, a brake interlock shall be energized to stop the coach. The reverse operation of this vehicle shall be limited to 5 mph. The equipment below the turntable shall easily accessible to safely service and maintain.

The articulation area shall be covered by a flexible accordion type structure made of sturdy, durable, weatherproof, fire-resistant and vandal-resistant material using stainless steel or extruded aluminum trim with stainless steel fasteners. The material shall be gray in color.

The articulated joint shall be designed to incorporate an anti-jackknife device in its mechanics. This device shall prevent the uncontrolled right and left horizontal plane movement of the vehicle. The major components of this system shall be solely supplied by one vendor and warranted under section 4.0.

5.1.4.1.1 Physical Size

With the exception of exterior mirrors, marker and signal lights, flexible portions of the bumpers, fender skirts, and rubrail, the coaches shall have the following dimensions.

(1) Length	60 feet, 0 inches (+0, -3 inch)
(2) Width	8 feet, 6 inches (+0, -3 inch)
(3) Height	11 feet, 6 inches (+2, -5 inch)

5.1.4.2 Weight

Curb weight shall not exceed 46,500 lbs. Each coach shall be delivered with a weight certificate showing the curb weight of that vehicle. For each pound in excess of 46,500 lbs., $5.00 will be deducted from the invoice for that vehicle.

5.1.4.3 Capacity

Rated capacity of the 60 foot articulated coach shall be no less than 57 seated passengers with the standard seating configuration. See Section 5.2.3.2. SLW and GWR shall be determined by the seating and standee capacities of the arrangement specified.

5.2.1.1.6 Passenger Windows

A minimum of 12,000 square inches of window area, including door windows, shall be required on each side of the 60 foot articulated coach. Section 5.2.4.2 describes the specific requirements for passenger windows.

5.2.1.1.7 Passenger Doors

Three doors shall be provided on the right side of the coach for passenger ingress and egress. The front door shall be forward of the front wheels and located so that the driver is able to collect or monitor the collection of fares. The middle door shall be located forward of the middle (or second) axle. The rear door shall be located rearward of the articulated section but forward of the rear (or third) axle. Specific requirements for doors are in Section5.2.1.8. Requirements for operation of doors are in Section5.2.2.1.

5.2.1.2.10 Hoisting

The coach axles or jacking plates shall accommodate the lifting pads of a 3-post hoist system.

5.2.3.2.4 Seat Dimensions and Arrangements

. Seating capacity of 60 foot articulated coaches shall be no less than 57 persons.

See Figure 5.2.3.4-A, "Seating Arrangement Articulated Coach" for seating arrangement and stanchion location.

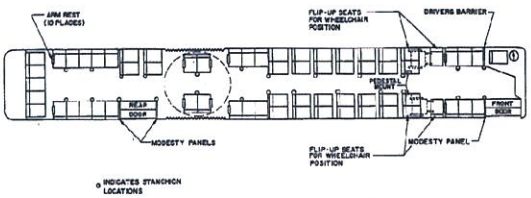

Figure 5.2.3.4-A. Seating Arrangement Articulated Coach.

5.2.4.4 Roof Escape Hatches and Roof Vents

The coach shall be equipped with three (3) roof escape/vent hatches, Spheros Vision glass hatch # RAL 7042 or Approved equal, which shall be captive and resetable from inside the coach when released.. The hatches shall be located approximately over each axle. The roof escape/vent hatch shall also function as a manual roof vent.

5.2.6.3.1 General Requirements (passenger assists)

A minimum of thirty (30) nylon passenger assist straps shall be supplied by Allegheny Cable Company #BWG.S-8000, Authority Stock #79-1772 and installed on the horizontal stanchions. Location of straps will be determined at the time of pilot bus construction.

5.2.6.8.2 Camera **Views** *(additional)* [1]

Camera 7:[1] *– Third Door – Mounted under the lighting panels on the right side of the bus, opposite the third passenger door, this camera shall capture a view centered on the third door, showing the entire door, with the top of the view slightly above the top of the door.*

5.3.1.3.1 Engine

The coach shall be powered by a Cummins ISL 320 horsepower diesel engine or Approved Equal certified on No. 2 ULS diesel fuel with up to a 20% mix of BioDiesel. The engine shall operate for 300,000 miles on the design operating profile without major failure or significant deterioration.

5.3.1.3.3 Transmission

The retarder shall have three stage application and be activated in the following configuration. The first stage (33-1/3 % retardation) shall be activated by application of the first microswitch on the brake pedal The second stage (33-1/3 % retardation) shall be activated by application of the second microswitch on the brake pedal. The third stage (33-1/3 % retardation) shall be activated by the third microswitch on the brake pedal.

5.3.2.3 Center Axle

For the 60-foot articulated coach, the center axle shall be the same model as the rear driving axle. The only difference being that since it is not a driving axle, it is not necessary to have a complete differential carrier assembly. A blank cover shall be installed in place of the carrier cap assembly. The braking system shall be identical to that on the rear axle.

5.3.6.2.1 Fuel Tank

Fuel tank capacity shall be at least 160 usable gallons.

5.3.6.6.7 Alternator

The alternator shall be a heavy-duty direct mount gear or belt driven Niehoff 24-volt Model C802, D configuration, DC self-rectifying low cut-in type having a minimum rated capacity output of 450 amperes or Approved Equal..

5.3.7.5 Components

The coach shall be equipped with an A/C system consisting of a Thermo-King AT-1 unit, utilizing an engine belt-driven screw type compressor, two (2) rooftop evaporator units and a condensing unit located a the top rear.

APPENDIX A - CONFIGURATION AUDIT SHEETS

(k) - Referenced on Agreement Page 2 of 6

(These Forms Shall Apply to All Types of Buses 35 Foot, 40 Foot and 60 Foot Articulated

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: _____

Coach Number: _____

Coach Production Number: _____

Item	Technical Specifications Number	Requirement	Inspection Instructions	Actual Measurement	Inspector & Date	Remarks & Discrepancies Notes
			PARK COACH OVER PIT THAT IS SURROUNDED BY SMOOTH LEVEL SURFACE. VERIFY COACH AT DESIGN HEIGHT, LEVELED, AND TIRES PROPERLY INFLATED.			
Physical size 40 Foot 60 Foot 35 Foot	5.1.4.1.1 (1) 5.1.4.1.1 (2) 5.1.4.1.1 (3)	Length 40' 0" (+0",-3") Width 8' 6" (+0",-3") Height 10' 3"(+0",-5") 60' 0" (+0", -3") 35' 0" (+0", -3")	Measure length of coach from the furthest forward hard portion of front coach to rearmost hard position of rear coach; note any part of coach extending beyond bumpers Measure width of coach body at the widest portion with doors closed, exclude mirrors, fender skirts, rubrail and lights. Measure height of coach at the highest part; exclude radio antenna, roof hatch closed.	Length _____ Width _____ Height _____		
Underbody Clearance	5.1.4.1.2 (1) 5.145.1.2 (2) 5.1.4.1.2 (3)	Ramp Clearance 9° minimum approach 8° minimum breakover 9° minimum departure Ground Clearance 10" minimum Axle Zone Clearance 5-1/2" minimum Wheel area clearance 6-1/2" minimum (fixed) ," minimum (moving)	Identify each part of coach within 12" of ground plane, excluding splash aprons; measure vertical distance from part to ground plane, horizontal distance to centerline of nearest wheel, and calculate resultant angle; determine if part meets ramp clearance requirements and note nonconforming parts. Identify parts less than 10" above ground plane; note parts not located within axle zone or wheel area. Note any part within axle zone having less than 5-1/2" ground clearance. Note any part within wheel area having less than 6-1/2" ground clearance for parts fixed to coach body or 5," ground clearance for parts that move vertically with axles.	Clearance angles _____ Breakover _____ Approach _____ Departure _____ Ground clearance _____ Axle zone _____ Wheel area _____		
			USE OF PIT FACILITY AND LEVEL FLOOR IS NOT REQUIRED TO CONTINUE COACH INSPECTION			
Pedestrian Safety	5.2.1.1.3	Exterior protrusions extending more than ½" to be radiused if within 80"	Inspect for protrusions that are not radiused to specification; inspect rear of coach for areas that can be used as toeholds	Pass/Fail		

Guide for Inspection: Coach Manufacturer: _____

The following items should be inspected on at least one (1) coach for each order Coach Number: _____

Coach Production Number: _____

		of ground; exclude left side rearview mirror, signal lights, and reflectors; no exterior areas that can be used as toeholds or handholds	or handholds				
Passenger Doors 40 and 35 Foot 60 Foot	5.2.1.1.7	Two doors on right side, front door ahead of front wheels, rear doors rearward of point midway between front door centerline and rearmost seat back. 3rd door ahead of 3rd axle.	Verify 2 doors on right side, front door ahead of front wheels. Measure from the back of rearmost seat to the centerline of front door; determine rear door location in compliance with specification. Verify rear door ahead of 3rd axle.	Pass/Fail Rear seat to rear door _____ Rear door to front door _____			
Advertising	5.2.1.1.8	Advertising to be integrated into coach without detracting from coach fittings, compromising passenger visibility, or restricting evacuation	Inspect holding devices for hook-ins appearance with no rough edges or pedestrian hazards; check locations for obstruction to passenger visibility or interference with any functional component on the coach	Pass/Fail			
Towing	5.2.1.2.8	Tow eyes front and rear accommodate 1.5" clevis crane hook; front eyes allow attachment of rigid tow bar	Verify front and rear tow eyes; verify 1.5" crane hook accommodation; verify front eyes accommodate tow bar installation.	Pass/Fail			
Jacking	5.2.1.2.9	Jacking plates 10" maximum height with flat tops.	Measure height of jacking plates. Inspect for location, easily accessible without crawling under coach	Height _____ Pass/Fail			
Hoisting	5.2.1.2.10	Hoisting pads 3" with 1" deep flange	Measure hoisting pads Inspect for proper position, verify coach can be lifted on 2 post hoist and supported with jackstand. Articulated bus would use a 3-post hoist	Size _____ Pass/Fail			
Fire Protection	5.2.1.2.11	All holes in firewall between engine and passenger compartments sealed with fireproof material; hard piping on forward side of firewall.	Inspect firewall for sealing and continuity; inspect piping and wiring passages for sealing	Pass/Fail			
Rail Gutters	5.2.1.3.2	Rail gutters cross section area no less than ½" wide x ½" high	Verify installation of rail gutters over the passenger windows and doors; inspect for dams or obstructions in gutter. Measure mounting provisions on front and rear of coach; check for toehold.	Pass/Fail			
License Plate	5.2.1.3.3	Accommodate a rear standard US size license plate on or to left of center with no toehold	Measure mounting provisions on front and rear of coach, check for toehold.	Pass/Fail			

Guide for Inspection: Coach Manufacturer: _____

The following items should be inspected on at least one (1) coach for each order Coach Number: _____

Coach Production Number: _____

Railroads	5.2.1.3.4	Railroad of resilient material 2-½" maximum width and no higher than 3.5" above ground.	Verify resilient material Measure width and height	Pass/Fail Width _____ Height _____			
Headroom	5.2.1.4.1	78" at aisle and at aisle seat; 36" over rear bench seat.	Measure headroom at aisle and over each aisle seating position; record smallest dimension for aisle seat and rear bench seat; verify padding as required.	Pass/Fail Height Aisle _____ Height Rear _____			
Driver Barrier	5.2.1.4.2	Driver barrier closely fitted to sidewall and eliminates windshield reflections.	Verify installation of barrier behind driver; verify stability to reach around left side of barrier; verify barrier eliminates glare in windshield.	Pass/Fail			
Midway Panels	5.2.1.4.3	Midway panel behind each stepwell, rugged corrosion resistant construction; 2-½" knuckle clearance to doors extended from doors to within 1-½" ± ½" of floor.	Dimensional verify placement of panel; check construction materials, verify strength by pushing and pulling panel. Open doors and measure knuckle clearance.	Pass/Fail Floor Clearance Front _____ Rear _____ Knuckle clearance Front _____ Rear _____			
Rear Bulkhead	5.2.1.4.4	Panel contouring returns no lotus; air ducts louvered and components easily accessible	Inspect rear panel for surfaces that will retain lotus; inspect louvers in rear panel for shape to prevent lotus accumulation; verify easy access to components mounted behind paneling	Pass/Fail			
Floor Height	5.2.1.5.1	Low floor but 13.5" and 3+0.5° slope.	Measure floor height at centerline of front door. Determine slope of floor.	Height _____ Slope _____			

Guide for Inspection: Coach Manufacturer: _____

The following items should be inspected on at least one (1) coach for each order Coach Number: _____

Coach Production Number: _____

Steps	5.2.1.6.1	2 steps maximum to access rear portion of bus. 2" white band on edge of step tread	Verify steps and nose measurement	Pass/Fail Height _____ Rear height _____ Band width _____			
White Step Edges	5.2.1.6.1	Color band on edge of step(s) is white	Verify white color	Color of band _____			
Fender skirts	5.2.1.7.3	Skirt flexible if extended beyond body	Verify flexible fender skirts if they extend beyond widest part of body	Pass/Fail			
Splash Apron	5.2.1.7.4	Bolted behind each wheel or wheel set, as wide as tires, front and rear apron as wide as coach; ¼" minimum thickness; extend to within 3" of ground.	Measure width Measure thickness Measure height above ground. Verify aprons bolted to coach behind each wheel or set of wheels	Width _____ Thickness _____ Ground Clearance _____ Pass/Fail			
Door Dimensions	5.2.1.8.3	Door opening 81" high, 30" wide, allowable projections 3" x 18" top, 3" x 28" bottom; clear door opening minimum width 24" front and rear.	Measure the door openings when the doors are fully opened, measure distance between assist handles; provide dimensional sketch if opening is not rectangular and check for conformance to specification	Door height Front _____ Rear _____ Width open Front _____ Rear _____ Width clear Front _____ Rear _____			

Guide for Inspection: Coach Manufacturer: _____

The following items should be inspected on at least one (1) coach for each order Coach Number: _____

Coach Production Number: _____

Glazing	5.2.1.9.4	Upper ⅓ of both doors glazed no less than 43% Lower ⅓ of front and rear door glazed no less than 23%, 8" curb visible through closed front door 12" from curb	Calculate area of each doorway, draw horizontal line across center of each door, measure area of glazing in each section and calculate % of area glazed; verify visibility of curb from drivers seat	Doorway area Front _____ Rear _____ Glazed area Front Upper _____ Front Lower _____ Rear Upper _____ Pass/Fail			
Door Projection	5.2.1.8.5	Exterior projection 12" maximum; interior projection 20" maximum, 4" between hard surfaces of doors when closed	Measure exterior projection during opening cycle, measure interior projection when doors are open, measure distance between hard points at closing edge when doors are closed	Exterior Projection Front _____ Rear _____ Interior Projection Front _____ Rear _____ Gap Front _____ Rear _____			
Door Height above pavement	5.2.1.8.6	Doors clear 8" curb with coach on 3° side slope.	Measure distance from ground to lowest point on door during opening and closing cycle; must be greater than 8"	Height above ground _____			
Interior Access Doors	5.2.1.9.1	Integral openings with hinges and pass panels for door operating mechanism assembly without tools; all other doors open with special tool only; panels located in floor must be sealed and keyed to opening	Visually inspect all interior doors for integral appearance, open and close all doors verifying that special tool needed on those doors without hand latches; check hold open device; remove floor panels and verify mating provision and thickness of stainless ledge molding around door and opening; verify that panels cannot be mixed or improperly installed	Pass/Fail			

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: _____

Coach Number: _____

Coach Production Number: _____

Exterior Access Doors	5.2.1.9.2	All exterior access doors hinged on top or forward edge and close flush, retained open with props or springs; no tool required to open; areas handled flush but accessible; heavy doors counter balanced; power assist devices can be mechanically overridden	Open and close all exterior access doors; verify handles are flush mounted and doors close flush; doors hinged on top or forward edge; small doors retained open or closed automatically; and large doors counter balanced with safety props available; test manual system on any powered doors; verify tamperproof locks on all major doors	Pass/Fail			
Door Control	5.2.2.1.1	Door interlock switch, not in reach of seated driver, closes rear door, deactivates control system, releases interlocks, front door normal operation when set in "off" position	Verify presence, position, and functioning of switch	Pass/Fail			
Door Actuators	5.2.2.1.3	Independently adjustable and concealed mechanisms	Verify U.S. Vapor actuators, location and accessibility of mechanism adjustors	Pass/Fail			
Door Emergency Operation	5.2.2.1.4	Manual emergency operation of both doors from inside coach	Verify location, accessibility, and identification of opening device	Pass/Fail			
Windshield Wipers	5.2.2.2.1	Wiper on each half of windshield; park position along windshield center vertical edge; drive mechanism accessible	Verify number, location, park positions, and accessibility manually manipulate arms to verify no damage to mechanism; Measure distance from parked wiper to within 1" of center windshield strip and sweep to within 2 inches of outer windshield edges	Pass/Fail Center _____ Outer edge _____			
Windshield Washers	5.2.2.2.2	Wet entire wiped area; 5-gallon translucent fluid reservoir; heating source	Verify actuator, fluid reservoir capacity and access, and heating source	Pass/Fail			
Exterior Lighting	5.2.3.3.1	LED or Approved Equal sealed lamps throughout, shock-resistant mounting of lamps on engine compartment doors, door illumination lamps properly positioned and shielded; turn signal lights on each side of coach. Operating voltage 12VDC	Verify type of lamp, shock-resistant mounting of lamps on engine compartment doors, door lamp positions, and turn signal lights. 12VDC. Indicators any lamps which are not LED.	Pass/Fail			
Service Area Lighting	5.2.3.3.2	Lights in engine compartment 12VDC	Verify number and location of lamps and switches 12VDC Lights should be the same as the LED reverse lights	Pass/Fail Number _____			

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: _____

Coach Number: _____

Coach Production Number: _____

Driver Control	5.2.2.3.5	Foot controlled, high beam and directional; all controls clearly identified and serviceable from driver's seat or vestibule	All controls clearly marked, and location of controls	Pass/Fail			
Instrumentation	5.2.2.3.6	Speedometer, air gauges, indicator lights ahead of steering wheel and readable when wheel straight ahead	Verify location and readability of instruments and indicators; verify /1930 speedometer 90 mph, 1 mph maximum increments	Pass/Fail			
Onboard Diagnostics	5.2.2.3.7	Built-in diagnostic system with visual indicators in clear view of driver; provision for future addition of 5 indicators	Verify presence and location of indicators, and space for 5 additional indicators	Pass/Fail			
Electronic Engine & Transmission Diagnostics & Alarms	5.2.2.3.8	Engine, Transmission and other electronic component Alarms and Diagnostics	Verify presence and function	Pass/Fail			
Interior Trim General Requirements	5.2.3.1	No sharp depressions, inaccessible areas, protuberances, or sharp abrasive edges; no supportive surfaces within 19 vertical inches of lower edge of windows	Verify absence of sharp depressions, inaccessible areas, protuberances, sharp abrasive edges and supportive surfaces	Pass/Fail			
Trim Panels	5.2.3.1.1	Panel of melamine, stainless steel trim strips of stainless steel, painted areas free of dirt, runs, and orange peel, top and upper rear side of modesty panels sealed	Verify trim materials and painted surfaces	Pass/Fail			
Headlining	5.2.3.1.2	Melamine, painting texture with no loose edges; stainless steel, aluminum, plastic, or painted moldings and trim strips (color to match ceiling color); screen panels retained to prevent inadvertent opening	Verify headlining material, color matches painted moldings, adequate retention of access panels	Pass/Fail			
Front End	5.2.3.1.3	Dash area sealed, trim panels free of punctured, runs surfaces; trim color match balance of interior	Verify dash sealing, lack of punctures, runs finish, and matching colors	Pass/Fail			
Rear End	5.2.3.1.4	Rear bulkhead to be covered with upholstered fabric	Verify materials	Pass/Fail			

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: _____

Coach Number: _____

Coach Production Number: _____

Passenger Information/ Advertising	5.2.3.1.5	Frame suitable for placard on rear of driver's barrier, 23 X 22 inches	Verify frame on driver's barrier	Pass/Fail			
Passenger Seats General Design and Structure	5.2.3.2.1	Transverse seat structure cantilevered from side wall; 15" under seat clearance within 12" of aisle Armrests on the ends of each longitudinal seat located 7" to 8" above seat cushion, shaped, minimum width and thickness of armrests 2" with no sharp protrusions Non-padded seat back and seat bottom; backs and bottom inserts removable by special tool and interchangeable, vinyl upholstery;	Verify presence of armrests; measure height of armrest above seat cushion, verify presence of panels; measure width and thickness of armrests; verify absence of protrusions Verify sprung seat cushions remove two seat cushions and two seat backs using special tool, measure thickness, reassemble interchangeable units; verify sprung seat cushions; verify type of upholstery material, verify padding or special construction of upper rear portion of seat back	Pass/Fail Pass/Fail Pass/Fail			
Test and Strength Requirements	5.2.3.2.2	Stainless steel handhold on each transverse seat back; ½" diameter minimum, 4" long minimum	Measure diameter of handhold and height above seat back	Pass/Fail			
Seat Construction and Materials	5.2.3.2.3	Fiberglass, polycarbonate, or nylon seat material, exposed metal stainless steel, visible material unpainted, tamperproof fasteners, 2" minimum back thickness at knee height	Verify material, absence of painted surfaces, exposed metal surfaces of a stainless steel, and use of tamperproof fasteners; measure seat back at knee level (10 seats)	Pass/Fail			

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: _____

Coach Number: _____

Coach Production Number: _____

Seat Dimensions and Arrangements 40 Feet 35 Feet	5.2.3.2.4	Individual seat width 17 ± 1 inches, height 17 ± 1 inches, seat back width 17 ± 1 inches, seat back height 19 ± 1 inches Seats forward facing except at wheel houses; minimum hip-to-knee room 25" maximum (hip room 14" may be reduced at wheel houses to 9"); minimum seating capacity 35; no rubbish trap between longitudinal seats and sidewall 37 seats (minimum) 33 seats (minimum)	Measure dimensions of all seats Verify forward facing seats except at wheel houses and no rubbish traps; measure hip-to-knee room, foot room and seating capacity	Pass/Fail Pass/Fail Hip-to-knee room _____ Foot room _____ Seating capacity _____			
Wheelchair Restraint, General Specifications	5.2.3.2.5	Two (2) positions. Each with One (1) retractable lap belt (black), Four (4) retractable chest belts (red), all belts captive	Verify belts and straps retract and lock	Pass/Fail			

Guide for Inspection: Coach Manufacturer: ____________

The following items should be inspected on at least one (1) coach for each order Coach Number: ____________

Coach Production Number: ____________

Driver's Seat Dimensions	5.2.3.3.1	Cushion width 18" minimum Cushion length 14" maximum, 18" maximum Cushion height above floor 17" to 21" (adjustable) Cushion slope 5° ± 5° (toward rear) Back height 20" ± 2" Included angle between back and cushion 95° to 110° (adjustable) Seat unit fore and aft adjustable 8" maximum and utilize power slide release All adjustments possible in driver's seat	Measure width Measure length Measure height of undepressed cushion Measure cushion angle to horizontal Measure back height Measure range of angularity between back and seat cushion Measure longitudinal adjustment, verify release Verify all above adjustments can be accomplished in driver's seat	Cushion width ______ Cushion length ______ Cushion height ______ Cushion angle ______ Back height ______ Seat back and cushion angularity range ______ Longitudinal adjustment ______ Power release Pass/Fail Pass/Fail		
Driver's Seat Structure and Materials	5.2.3.3.2	Seat cushion and back padding shall be Polyurethane foam, fabric; with metal parts of unpainted stainless steel; dual seat back and seat bottom adjustments, at least two lumbar supports, air powered fore/aft slide release retractable seat belt system independent of seat adjustment mechanism	Measure seat cushion and back thickness Verify padded cushion and back, vinyl upholstery with stainless steel metal in exposed areas, dual controls, lumbar supports, air powered slide and seat belts do not have to be readjusted for various seat position adjustments	Cushion thickness ______ Back thickness ______ Pass/Fail		
Vestibule Floor Covering	5.2.3.4.1	"Standee line on floor 2" wide; color same as step edge; in line with driver's barrier	Verify material composition Measure width Verify presence, color match, and position of line	Pass/Fail Line width ______ Pass/Fail		

Driver's Compartment Floor Covering	5.2.3.4.2	Floor covering, Altro Black smooth, rubber material	Verify material composition and color	Thickness ______ Pass/Fail		
Passenger Area Floor Covering	5.2.3.4.3	Altro material extending in aisle are from rear seat to standee line (one piece), and under wheelchair positions door.	Measure thickness Verify material composition at rear door	Thickness ______ Pass/Fail		
Windshield	5.2.4.1.1	Field of vision 15° minimum up from horizontal; downward to detect object 3 1/2' high and not more than 2' in front of vehicle; horizontal vision 90° minimum No night reflections visible in projected area in front of driver's barrier, shaded band in upper portion, replaceable sections, no glue used Verify view of mirrors through windshield	Sit in driver's seat and adjust to comfortable driving position, measure horizontal and vertical vision angles Verify no reflections in windshield at night with interior lights on, shaded band location, and replaceability of sections Verify view of mirrors through windshield	Pass/Fail Pass/Fail Pass/Fail		
Driver's Side Window	5.2.4.1.2	Sliding, opening section window; replaceable unit	Verify opening section and replaceability	Pass/Fail		
Side Window Dimensions	5.2.4.2.1	Maximum mullion width 7" Fixed assemblies, emergency escape feature	Measure mullion width Verify that windows do not open; verify escape mechanism	Width ______ Pass/Fail		
Side Window Material	5.2.4.2.2	Laminated safety glass, 1/4" nominal thickness, tinted, no tint over side destination sign; 25% ± 5% gray tint Front and rear doors laminated safety glass, 1/4" min. thickness	Verify type of material; measure thickness; verify non-tinted glass over destination sign Verify type of glass; measure thickness	Pass/Fail Pass/Fail		
Ancillary Features	5.2.6	Fire extinguisher, reflector kit, coat hook, trash bag holder, three take one boxes, transfer cutter, pen/pencil holder	Verify installation and location	Pass/Fail		

Sunvisors	5.2.6.1.2	Transparent or opaque material, no obstruction of mirrors or air flow of climate control system; easy hand adjustment	Verify material; verify random positioning will not interfere with mirrors or air outlets	Pass/Fail		
Exit Signal	5.2.6.1.3	Chime, activation device near interior lighting fixtures	Verify presence of chime, location of device	Pass/Fail		
Outside Mirrors	5.2.6.2.1	Two mirrors (combination flat/convex); one on each side; curbside remote controlled rear field of vision includes vehicle rear wheels: curbside mirror 80" minimum height of lower edge; mirror assemblies fold against body. Roadside mirror lower than 80"	Verify quantity and position, field of vision, and folding feature; check installation of convex mirror	Pass/Fail		
Inside Mirrors	5.2.6.2.2	Inside mirrors for field of vision inside vehicle, not to interfere with use of right outside mirror; rear stepwell mirror with spot mirror over front door	Verify presence of mirrors; verify that placement does not obscure right outside mirror	Pass/Fail		
Passenger Assists: General Requirements	5.2.6.3.1	From front door rearward a vertical stanchion or handhold must make it possible to move from one assist to the other without losing support Excluding those mounted on doors, assists to 1-1/4" in diameter or width with radii minimum 1/8", and shall permit full hand grip with no less than 1-1/2" of knuckle clearance round the assist; all brackets, clamps, screw heads flush, all assists of anodized aluminum or stainless steel, seams always away from passenger sight	Verify presence of stanchion or handholds in positions required Measure diameter of handholds and knuckle clearance; verify flush mounting hardware	Pass/Fail Pass/Fail		

Front Doorway Assists	5.2.6.3.2	Front door or entry area assists minimum 1/4" diameter, vertical portions to be within 6" of vehicle exterior when doors are open, 1-1/2" clearance between assists and mount, door assists functionally continuous with horizontal assist and vertical assist on modesty panel	Verify presence of assists; verify vertical portion within 6" of outside of vehicle when doors open; verify 1-1/2" clearance between assist bar and mounting surface, verify functionally continuous	Pass/Fail		
Vestibule Assists	5.2.6.3.3	Vertical assist at driver's barrier 34" above floor, adequate clearance between assist and barrier surface, horizontal assist across front of coach and around fare box location, minimum 34" above floor, horizontal crash bar 44-1/2" above floor from driver's barrier to dash at center of bus hinged with latching device	Verify presence of vertical assist at barrier, height dimensions, and clearance around assist	Pass/Fail		
Overhead Passenger Assists	5.2.6.3.4	Except rear door location continuous longitudinal over-head bar at centerline of aisle seat; height between 70" and 74" above floor.	Verify presence of bar over aisle seat centerline; measure height	Pass/Fail		
Longitudinal Seat Assists	5.2.6.3.5	Full height vertical assists as per drawing	Verify vertical assists from edge of seat to longitudinal overhead assist; verify staggered pattern	Pass/Fail		
Destination Signs	5.2.6.4.1	Verify sign is Twin Vision all LED System or Approved Equal with the following features: Front sign 1792 LED, exterior side 630 LED, interior side 434 LED, and rear 141 LED and LED auxiliary sign	Verify operation of driver's console by inserting codes; verify voice annunciator, if so equipped, verify accessible for module replacement	Pass/Fail		
Front Auxiliary Sign	5.2.6.4.4	Run number sign, LED backlit mechanical scroll sign located at the right of center on dash panel; characters minimum 2.7"	Verify presence and location of sign.	Pass/Fail		
Rear Sign	5.2.6.4.7	Verify that "wheelchair" symbol appears whenever the W/C ramp is in use or enabled	Verify Operation	Pass/Fail		
Stop Announcement	5.2.6.4.10	Stop Announcement system installed and operational	Verify system installation and operation	Pass/Fail		

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: ____________________

Coach Number: ____________________

Coach Production Number: ____________________

Fare Collection	5.2.6.5	Provisions for fare box on a 24V, 10A protected circuit stainless steel base with bolts and acorn nuts Stanchion to be provided for transfer mounting, cutting, and punching equipment, located on right side of instrument panel or fare box support	Verify fare box provision; verify protected circuit power lead Verify type and location of equipment	Pass/Fail Pass/Fail		
Bicycle Rack	5.2.6.6	Sportworks 2-position rack mounted to front bumper. All stainless steel.	Verify type and location of equipment	Pass/Fail		
Wheelchair Loading Device	5.2.6.7	Lift-U ramp	Verify type and location of equipment	Pass/Fail		
Video Surveillance System	5.2.6.8	March Networks MDVR system with 6 cameras	Verify installation and operation of system. Camera View to be: 1. Front Door - Mounted above and slightly behind the Operator's left shoulder, this camera shall capture a view that includes the front door and the top of the farebox. 2. Rear Door - Mounted under the lighting panels on the right side of the bus, opposite the rear door, this camera shall capture a view centered on the rear door, showing the entire door, with the top of view slightly above the top of the door. 3. Front-To-Rear - Mounted under the front destination sign compartment, this camera shall capture a view centered on the passenger aisle with the top of the view at ceiling level 4. Rear Deck - Mounted forward of the rear door and facing rearward, this camera shall capture a view centered on the rear aisle with the top of the view at ceiling height. 5. Forward Looking - Mounted within the left side of the front destination sign compartment, facing forward, this camera shall capture a view out the front of the vehicle with the bottom of the view able to see a 24" high object, placed at street level, 3 ft in front of the front bumper. 6. Curbside - Mounted above and forward of the front door and facing rearward, this camera shall capture a view that includes the rear wheels of the coach and the curbside of the coach as far forward as possible.	Pass/Fail Camera Views 1. ____ 2. ____ 3. ____ 4. ____ 5. ____ 6. ____		
Power Plant Mounting	5.3.1.2.1	Rear location; separate from passenger compartment	Verify power plant location	Pass/Fail		

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: ____________________

Coach Number: ____________________

Coach Production Number: ____________________

Service	5.3.1.2.2	Engine removal shall not require A/C lines to be "broken". Locking air intake restriction gauge. Fluid fill location marked. ESOC oil change fittings. Primary fuel filter to be Davco Pro 384 heated. Hoses to be Aeroquip 300	Verify type and location of equipment	Pass/Fail		
Secondary Oil Filter	5.3.1.2.5	Spinner II oil filter	Verify type and location of equipment	Pass/Fail		
PowerPlant	5.3.1.3	Engine shall be Cummins ISL Air Cleaner shall be Donaldson 13140044 Engine shall be equipped with running level dipstick	Verify type and location of equipment	Engine Mfg: ______ Model: ______ Air Cleaner Running Level Dipstick (Y/N) ______		
Transmission	5.3.1.3.3	Trans shall be Voith D864.5E Dipstick tube with "maintenance only plug". Dipstick supplied separately.	Verify type and location of equipment	Trans Mfg: ______ Model: ______ Dipstick Tube (Y/N)		
Suspension General Requirement	5.3.3.1	Automatic height control	Verify presence of leveling system	Pass/Fail		
Air System	5.3.5.1.4	Fitting for outside air supply in engine compartment Color keyed, nylon air lines	Verify presence of air fittings Verify color keyed lines	Pass/Fail Pass/Fail		
Fuel Filler	5.3.6.2.2	Fuel filler on right side of vehicle, located 7' to 25' behind front door centerline; recessed in body side; all Emco-Wheaton or Approved Equal type with anti-spill valve.	Verify location of fuel filler, verify recessed configuration, type	Pass/Fail		
Bumper System Location	5.3.6.4.1	Top of bumper 24" above ground	Measure height to top of bumper	Bumper height		
Bumper Material	5.3.6.4.4	Visible surfaces, non-corrosive material and black in color	Verify color and material	Pass/Fail		

Guide for Inspection:

The following items should be inspected on at least one (1) coach for each order

Coach Manufacturer: ____________________

Coach Number: ____________________

Coach Production Number: ____________________

Electrical System General Requirements	5.3.6.5.1	Main electrical system 24 volts, with 12 volt provisions for radio and all exterior lighting circuits.	Verify system voltage	System voltage ______		
Modular Design	5.3.6.5.2	DINEX G3	Verify System	System type ______		
Junction and Component Boxes	5.3.6.5.3	System components located in sealed junction boxes; appropriate schematic diagrams permanently attached to lid; a start-and-run control box in engine compartment area	Verify sealed enclosures for electrical components with permanently attached schematic diagrams; verify presence of engine start-and-run control box in engine compartment area	Pass/Fail		
Batteries	5.3.6.6.2	Two conventional 8D batteries slide or roll out from side of vehicle; latched in stowed position; batteries in secure tray Fire Suppression System — 5.2.6.6.4 — Coach to be equipped with a system manufactured by Amerex or Approved Equal	Verify presence of slide or roll out container with latch, and secure battery tray. Batteries replaced without lifting. Verify system installation	Pass/Fail Pass/Fail		
Charging Equalizer	5.3.6.6.9	Vanner model EM-70, 12 volt charging equalizer installed at batteries	Verify system installation	Pass/Fail		
Air Intakes	5.3.7.4	Hinged Air return grill, removable filters	Verify configuration of return air grill, verify removability of filters	Pass/Fail		
Mobile Radio System	5.3.8.1	Verify that specified mobile radio system is installed, hand set at top left of driver's window, control unit in radio box, 30 amps, 12-volt supply with protected lead terminated on stud block, 12 volt, 5 amp unswitched power supply antenna, antenna wire, control cable and ignition cable installation. Radio box key CH 751.	Verify mobile radio installation including hand set, control unit, terminal studs, proper sized wire for 30 and 12 amp supplies, antenna, antenna wire, control cable and ignition cable, radio box key type.	Pass/Fail Distance ______		
Public Address System	5.3.8.2.4.4	Provisions for public address system with auxiliary microphone input	Verify provisions for public address system, verify auxiliary microphone jack	Pass/Fail		

7 RECORD OF REVISION / ADDENDA

(n) - Referenced on Agreement Page 2 of 6

7.1 ADDENDA 1

Notes:

Added "Addendum 1 – February 2010" to Title Page
Document re-paginated as required to accommodate changes
Updated page numbers in Table of Contents
Section 1.1.1.4 - Proposal Due Date revised from February 25, 2010 to March 11, 2010
Section 1.1.3.1.(5a) – Wording of section revised to delete requirement for Buy America Worksheet with Proposal
Section 1.1.3.2.(3) – Revised the requirement that Proposals pages be numbered sequentially
Section 1.1.3.2.(8c) – Added Canadian Accepted Accounting Principles
Section 1.1.3.2.(8h) - Wording of section revised to delete requirement for Buy America Worksheet with Proposal
Section 1.1.3.3.(5) – Corrected option quantity of articulated buses to be 125
Section 1.1.3.3.(5) – Revised PPI reference from 141103 to 1413
Section 1.1.3.3.(5) – Revised PPI calculation to be based on date of Notice to Proceed vs date of Proposal
Exhibit 11 – Revised the reference section for Items A3 and B3
Exhibit 11 – Clarified pricing information format for Alternates in sections A and B of Exhibit 11
Section 2.5.1 – Revised section to allow cashiers check or letter of credit as security
Section 2.9.5 – Revised schedule requirement for Pre-Production sample coach from 120 days after NTP.
Section 2.10.3 – Revised section to allow for invoicing of Training in Phases.
Section 2.29.4 (2c) – Deleted requirement for 'per contract' coverage
Section 2.50.1.(1) – Revised section to address timing of Buy America worksheet submission.
Section 4.1.2 – Clarified complete coach warranty period from 50,000 miles.
Section 5.2.6 – Added requirement for 'heavy duty' fire extinguisher bracket.
Section 5.2.6.4.1 – Deleted requirement for electronic front auxiliary (run number) sign.
Added Record of Revision / Addenda Section

7.2 ADDENDA 2

Notes:

Added "Addendum 2 – February 2010" to Title Page
Document re-paginated as required to accommodate changes
Updated page numbers in Table of Contents
Section 5.2.3.2.3 Deleted requirement for padding in passenger seats
Section 5.2.3.2.4 Added requirement for flip up seats to lock in up and down positions

Section 5.2.3.2.5.1 Added requirement that wheelchair restraint system be attached to a structural column or window stringer; Added that belts be self-retracting; Added that forward belt attachment fixture may also be floor mounted.
Section 5.2.3.4.1 Deleted reference to Altro flooring being of rubber composition
Section 5.2.3.4.2 Deleted reference to Altro flooring being of rubber composition
Section 5.2.3.4.3 Deleted reference to Altro flooring being of rubber composition
Section 5.2.6(7) Revised part number of take-one box.
Section 5.2.6.4.10 Added requirement that Automatic Passenger Counting equipment be supplied.
Section 5.3.1.3.3 Corrected callout for transmission dynamometer attachment fixture from "Volive" to "Voith"
Section 5.4.2.3 Revised requirement for Phase I training to be completed within, from 10 days to 20 days
Section 5.4.2.3 Corrected column entries in Training Plan Table for the Length of Class (hrs) and the # of sessions for classes #13, 14, 15 and 16
Section 5.7.3 Clarified that engine diagnostic software shall be Insite Pro

7.3 ADDENDA 3

Added "Addendum 3 – March 2010" to Title Page
Document re-paginated as required to accommodate changes
Updated page numbers in Table of Contents
Section 5.1.4.4.1 Revised the service life annual mileage from 75,000 to 50,000.
Section 5.2.6.3.1 Corrected the PAAC Stock number for passenger straps.
Section 5.3.1.3.3 Clarified the reliability expectation language.
Section 5.3.6.5.2.3 Revised the minimum quantity of multiplex system diagnostic tools.
Section 6 – Subpart 5.26.8.2 Added requirement for 7th surveillance camera on articulated buses

7.4 ADDENDA 4

Section 5.3.8.1.1 Revised radio from CM300 to CDM1550.
Section 5.3.8.2.1 Revised Radio from CM300 to CDM1550

7.5 ADDENDA 5 - BAFO

Document re-paginated as required to accommodate changes
Exhibit 11 (Pricing Schedule) Added Radiator fan system to Major Components breakout
Section 5.3.1.3.2 Added requirement for electrically driven radiator/CAC fan system.
Section 5.6.3 Added Radiator Fan System to Major Components Package