ACTION SHEET
CITY COUNCIL COMMITTEE MEETING OF 07/30/14
ITEM FROM FINANCE COMMITTEE MEETING OF 07/14/14

ISSUE:

17. Request for Approval of Procurement under Cooperative Price Agreement – Seven (7) CNG Replacement Buses for Transit Division; Gillig LLC. (Ken Smithson)

    A. Request for Approval of Budget Increase – Grant Fund

FINANCE COMMITTEE ACTION: APPROVED AS CONSENT ITEM

Requested approval of procurement under cooperative price agreement for seven (7) CNG replacement buses for transit division with Gillig LLC in the amount of $3,229,884.00.

FUNDING SOURCE: 52416.571000

SPECIAL CONDITIONS OR AMENDMENTS

STAFF FOLLOW-UP:

VOTE	FOR	AGAINST	ABSTAIN
COUNCILOR TRUJILLO	X		
COUNCILOR RIVERA	X		
COUNCILOR LINDELL	X		
COUNCILOR MAESTAS	Chair		
CHAIRPERSON DOMINGUEZ	Excused		

3-17/14/FCMissue

City of Santa Fe, New Mexico

memo

DATE: July 8, 2014

TO: Finance Committee

FROM: Robert Rodarte, Officer
Purchasing Division

VIA: Marcos A. Tapia, Director
Finance Department

ISSUE: Purchase of (7) Transit Buses:
Vendor: Gillig LLC (California):
Procurement Method: Co-operative: Transit Authority of Lexington-Fayette Urban County Government: Contract # RFP1302

SUMMARY:

The Purchasing Division is requesting the procurement of seven transit buses for the Transit Division from the aforementioned contract, in the total amount of $3,229,884.00. Gallig LLC (California) is the awarded vendor in the publicly procured Request for Proposal listed above.

On June 25, 2014 the Santa Fe City Council approved a revolving fund loan through the New Mexico Finance Authority (NMFA) in compliance with Bill NO. 2014-16, Ordinance No 2014-21. Funding for this procurement will be availiable 52416.571000, pending the approval of the attached Budget Adjustment.

The Purchasing Division has reviewed the **Transit Authority of Lexington-Fayette Urban County Government: Contract # RFP1302,** and has found it to be in compliance with all the required Federal Transit Administration Guidelines. All FTA required documents are available for review at the Transit Administrative Office. Although, this procurement is not funded by any Federal Funds, the decision was made to continue to follow all Federal guidelines, in the event that possible funding may become available at a future date.

By City policy, the City can use State or Federal Price Agreements, and Co-operative contracts, without having to bid the items on its own. By City Policy, procurement from these agreements over $50,000, require City Council approval (City Purchasing Manual Section 11.1).

ACTION:

It is requested that this recommendation of award to Gillig LLC, from the aforementioned contract, in the total amount of $3,229,884.00 be reviewed, approved and submitted to the City Council for its consideration.

ACTION SHEET
ITEM FROM THE
PUBLIC WORKS/CIP AND LAND USE COMMITTEE MEETING
OF
MONDAY, JULY 7, 2014

ITEM 7

REQUEST FOR APPROVAL OF PIGGYBACK PROCUREMENT OF SEVEN (7) HEAVY DUTY 35-FOOT LOW-FLOORING REPLACEMENT BUSES FROM THE LEXINGTON, KY CONTRACT WITH GILLIG LLC IN THE AMOUNT OF $3,229,884

- REQUEST FOR APPROVAL OF A BUDGET ADJUSTMENT REQUEST **(KEN SMITHSON)**

PUBLIC WORKS COMMITTEE ACTION: Approved on Consent

FUNDING SOURCE: 52416.571000

SPECIAL CONDITIONS / AMENDMENTS / STAFF FOLLOW UP:

VOTE	FOR	AGAINST	ABSTAIN
CHAIRPERSON TRUJILLO			
COUNCILOR BUSHEE	Excused		
COUNCILOR DIMAS	X		
COUNCILOR DOMINGUEZ	Excused		
COUNCILOR RIVERA	X		

City of Santa Fe, New Mexico

memo

DATE: June 27, 2014

TO: Public Works Committee

THRU: Jon Bulthuis, Transit Division Director

FROM: Ken Smithson, Director of Operations and Maintenance

SUBJECT: Request for Approval of Piggyback Procurement of Seven (7) Heavy Duty 35-Foot Low-Floor CNG Replacement Buses From the Lexington, KY Contract with Gillig LLC

ITEM

We are expecting delivery of five (5) replacement buses in October 2014, and 80 percent of the total cost will be paid by grant funds. Even as this purchase is underway, we need to begin another procurement immediately for seven (7) more buses, to be delivered by the end of 2015. Both of these procurements, combined, with enable us to replace 12 of the older Bluebirds prior to expiration of their CNG tanks, which will force their retirement. The Bluebirds have been the core of the transit fleet for nearly 14 years; are well past their useful life; and parts are all but impossible to find these days.

As grant funds from the Federal Transit Administration (FTA) for capital fleet replacement have not been as forthcoming as they were in previous years, the City obtained a public project revolving fund loan from New Mexico Finance Authority (NMFA), in the amount of $3.5 million, for this latter procurement of seven replacement buses. The ordinance for the repayment schedule was adopted by the City Council at its regularly scheduled meeting on June 25, 2014 (Bill No. 2014-16, Ordinance No. 2014-21).

In parallel with the approval process for the ordinance, and since time is of the essence, we have taken some initial steps in the procurement process, as follows:

- We are targeting December 2015 for delivery of the new buses, as the seven Bluebirds they are replacing must be pulled from service in February 2016
- Gillig has a lead time of 18 months on new orders, which does not give us time to issue our own Request for Proposals
- We have issued a non-binding Letter of Intent to Gillig, which enables us to 'hold' a place in the production schedule – for an expected delivery in December 2015

- We have obtained an assignment letter from South Bend, IN, which enables us to piggyback on an open contract with Gillig for seven 35-ft low floor CNG buses (no change in scope)
- We have reviewed the original RFP and addendums from Lexington, KY , and are confident that it meets all FTA requirements, including having a specific assignment clause to South Bend, IN
- We do not have an activity line item in an FTA grant for this procurement and will not be using FTA funds; therefore, do NOT need to follow federal requirements
- We, however, believe that since the original procurement met FTA requirements, this also satisfies the City's purchasing requirements for full and open competition

The cost per bus, per our specifications, is $461,412 – nearly identical to the price we are paying for the current order – for a total of $3,229,884 for the seven buses. The balance from the NMFA loan (approx. $270,000) will be used to replace some of our paratransit vehicles that are reaching, or have reached, the end of their useful life. This will be a separate and distinct procurement at a later date.

ACTION REQUESTED

Recommend to the Finance Committee to approve the piggyback procurement of seven (7) heavy duty 35-foot low-floor CNG replacement buses from the Lexington, KY contract with Gillig LLC in the amount of $3,229,884; and a corresponding budget increase of $3,500,000 to account for the NMFA loan.

ATTACHMENTS

Exhibit A – Offer letter from Gillig
Exhibit B – Price Variance sheet from Gillig
Exhibit C – Assignment letter from South Bend, IN
Exhibit D – Lexington, KY contract with Gillig
Exhibit E – Addendum #2, issued April 5, 2013
Exhibit F – Addendum #1, issued March 25, 2013
Exhibit G – RFP # 1302, issued February 25, 2013

City of Santa Fe, New Mexico

BUDGET ADJUSTMENT REQUEST (BAR)

#

DEPARTMENT / DIVISION / SECTION / UNIT NAME	DATE
	06/30/2014

ITEM DESCRIPTION	BU / LINE ITEM	<--(Finance Dept Use Only)--> SUBLEDGER / SUBSIDIARY	DR / (CR)	INCREASE	DECREASE
Revenue - New Mexico Finance Auth.	51416.490310		(CR)	(3,500,000)	
Expenses - Vehicles > 1.5	52416.571000		DR	3,500,000	
TOTAL				$ -	$ -

JUSTIFICATION: *(use additional page if needed)*
--Attach supporting documentation/memo

To load the revenue and expense sides of the budget for the procurement of seven (7) 35-ft, heavy duty, low floor, CNG buses with a Public Project Revolving Fund loan from the New Mexico Finance Authority.

Stephen Morales 7/8/14
Lois Amador 06/30/2014
Prepared By Date

For Division Director 6-30-14 Date

For Department Director 6-30-14 Date

CITY COUNCIL APPROVAL

City Council Approval Required ☐

City Council Approval Date

Agenda Item #:

7/8/14
Budget Officer Date

7/8/14
Finance Director Date

City Manager Date

City of Santa Fe
Summary of Contracts, Agreements, & Amendments

Section to be completed by department for each contract or contract amendment

☑ **FOR:** ORIGINAL CONTRACT or CONTRACT AMENDMENT

2 Name of Contractor Gillig LLC

☐ Complete information requested Plus GRT

☐ x Inclusive of GRT

Original Contract Amount: $3,229,884.00

Termination Date: None

☐ Approved by Council Date: July 30, 2014

☐ or by City Manager Date: _____

Contract is for: Procurement of seven (7) 35-ft, heavy duty, low floor, CNG replacement buses for Transit Division.

Amendment # _____ to the Original Contract# _____

Increase/(Decrease) Amount $ _____

Extend Termination Date to: _____

☐ Approved by Council Date: _____

☐ or by City Manager Date: _____

Amendment is for:

☐ **History of Contract & Amendments:** (option: attach spreadsheet if multiple amendments) Plus GRT

☐ Inclusive of GRT

Amount $ _____ of original Contract# _____ Termination Date: _____

Reason: _____

Amount $ _____ amendment # _____ Termination Date: _____

Reason: _____

Amount $ _____ amendment # _____ Termination Date: _____

Reason: _____

Amount $ _____ amendment # _____ Termination Date: _____

Reason: _____

Total of Original Contract plus all amendments: $ _____

City of Santa Fe
Summary of Contracts, Agreements, & Amendments

5 **Procurement Method of Original Contract:** (complete one of the lines)

RFP# _____ Date: _____

☐ RFQ _____ Date: _____

☐ Sole Source _____ Date: _____

Other Piggyback procurement on open Lexington, KY contract with Gillig

6 **Procurement History:** N/A
example: (First year of 4 year contract)

7 **Funding Source:** New Mexico Finance Authority **BU/Line Item:** 51416.490310

8 **Any out-of-the ordinary or unusual issues or concerns:**

(Memo may be attached to explain detail.)

9 **Staff Contact who completed this form:** Ken Smithson, Director of Operations & Maintenance

Phone # Ext. 2223

☐ **Certificate of Insurance attached.** (if original Contract)

Submit to City Attorney for review/signature
Forward to Finance Director for review/signature
Return to originating Department for Committee(s) review or forward to City Manager for review and approval (depending on dollar level).

To be recorded by City Clerk:

Contract # _____

Date of contract Executed (i.e., signed by all parties): _____

Note: If further information needs to be included, attach a separate memo.

Comments:

Exhibit A

Offer letter from Gillig

Post Office Box 3008
Hayward, CA 94540-3008
(510) 785-1500
FAX: (510) 785-6819

June 26, 2014

Jon Bulthuis
Transit Director
City of Santa Fe NM
2931 Rufina Street
Santa Fe NM. 87507

Dear Jon;

Thank you for your interest to purchase seven (7) Gillig 35 ft. CNG bus by "piggybacking" off of the Lexington KY contract. Attached you will find the price summary sheet that will pertain to your order.

Gillig is pleased to quote the following:

Seven (7) 35 ft. CNG bus @ $461,412

This price is valid for 30 days and is FOB Santa Fe NM. Prices exclude tax and licenses. The production start date of your bus will be within 18 months from receipt of purchase order.

We thank you for this opportunity and appreciate your interest in the Gillig product for your fleet needs. Should you have any questions, please feel free to call me at 510-303-0202

Sincerely

Joe Saldana
Gillig Regional Sales Manager

Exhibit B

Price Variance sheet from Gillig

PRICE VARIANCE
6/25/2014
SANTA FE, NM PIGGYBACK ON LEXINGTON, KY CONTRACT
(7) 35' LOW FLOOR CNG BUSES, SN: TBD

ITEM	LEXINGTON, KY	SANTA FE, NM	VARIANCE
ENGINE	2013 ISL-G, 280 HP	2013 ISL-G, 280 HP	-
AUXILIARY ENGINE OIL FILTER	NOT INCLUDED	NOT REQUIRED	-
COOLANT FILTER	STANDARD FLEETGUARD	STANDARD FLEETGUARD	-
ENGINE FUEL FILTER	STANDARD FLEETGUARD	STANDARD FLEETGUARD	-
STARTER	DELCO 42MT	DELCO 42MT	-
ALTERNATOR	NIEHOFF C803	DELCO 450DN	94.00
ENGINE BLOCK HEATER	NOT INCLUDED	NOT REQUIRED	-
AIR RESTRICTION INDICATOR	DONALDSON INFORMER	DONALDSON INFORMER	-
E-COAT RAD/CAC, HYD COOLER	INCLUDED	REQUIRED	-
RADIATOR	MODINE E-FAN	MODINE E-FAN	-
RADIATOR TANK GUARD	NOT INCLUDED	NOT REQUIRED	-
ENGINE OIL EXTRACTOR PORT	NOT INCLUDED	NOT REQUIRED	-
TRANSMISSION	ALLISON B400R	ALLISON B400R	-
TRANS OIL EXTRACTOR PORT	NOT INCLUDED	NOT REQUIRED	-
AXLE HUB SEALS	FRONT: C/R OIL REAR: C/R OIL	FRONT: GREASE REAR: C/R OIL	(60.00)
WHEEL MOUNTING	HUB PILOTED	HUB PILOTED	-
HUBODOMETER	VEEDER ROOT	NOT REQUIRED	(45.00)
HUBODOMETER GUARD	NOT INCLUDED	NOT REQUIRED	-
ELECTRIC STEERING ASSIST	NOT INCLUDED	NOT REQUIRED	-
CNG SMART GAUGE AND ELECTRIC SOLENOIDS	NOT INCLUDED	REQUIRED	2,214.00
ENGINE OIL & TEMP GAUGES	ELECTRIC	ELECTRIC	-
REAR RUN BOX GAUGES	NOT INCLUDED	NOT REQUIRED	-
REAR HAND THROTTLE	NOT INCLUDED	REQUIRED	144.00
ELECTRICAL TOW CONNECTION	COLE-HERSEE	NOT REQUIRED	(134.00)
BATTERIES	(4) DEKA GROUP 31	(2) DEKA 8D	(166.00)
BATTERY JUMP START CONN	(1) ANDERSON 350	(2) ANDERSON 350	132.00
ENGINE SKID PROTECTION	NOT INCLUDED	WITH EXTENDED TOW EYES	129.00
BRT STYLING	NOT INCLUDED	NOT REQUIRED	-
WHEELCHAIR RAMP	LIFT-U LU-18	LIFT-U LU-18	-
HVAC MOTORS (TK)	BRUSHLESS	BRUSHLESS	-
HVAC COMPRESSOR (TK)	X430	X426	-
REFRIGERANT	R134A	R134A	-
FRESH AIR MAKE-UP	NOT INCLUDED	NOT REQUIRED	-
DRIVERS HEATER MOTORS	BRUSHLESS	BRUSHED	(387.00)
FRONT STEP HEATER	NOT INCLUDED	NOT REQUIRED	-
EXIT DOOR HEATER	NOT INCLUDED	NOT REQUIRED	-
UNDERSEAT HEATER	NOT INCLUDED	NOT REQUIRED	-
AUX DRIVERS FAN	NOT INCLUDED	(1) REQUIRED	89.00
AUXILIARY COOLANT HEATER	NOT INCLUDED	NOT REQUIRED	-

PRICE VARIANCE
6/25/2014
SANTA FE, NM PIGGYBACK ON LEXINGTON, KY CONTRACT
(7) 35' LOW FLOOR CNG BUSES, SN: TBD

ITEM	LEXINGTON, KY	SANTA FE, NM	VARIANCE
EXTERIOR FRONT DOOR OVERRIDE	NOT INCLUDED	REQUIRED	202.00
REAR DOOR	34" SWING-OUT (AIR-OPEN, SPRING-CLOSE)	48" PLUG (AIR-OPEN, AIR-CLOSE)	2,601.00
REAR DOOR CONTROLS	FULL DRIVER	FULL DRIVER	-
WHEELS	(7) FULL POLISHED	(7) FULL POLISHED W/DURABRIGHT W/DURAFLANGE	2,226.00
TIRES	CUSTOMER FURNISHED	(7) MICHELIN X INCITY	4,585.00
AD FRAMES	NOT INCLUDED	NOT REQUIRED	-
DRIVERS SEAT	RECARO ERGO METRO W/HEADREST W/3-PT BELT	RECARO ERGO METRO W/HEADREST W/2PT	(200.00)
DRIVERS SEAT ARM REST	NOT INCLUDED	REQUIRED	104.00
PASSENGER SEATS	AMSECO INSIGHT	AMSECO INSIGHT	-
PASSENGER SIGNALS	TOUCH TAPES	PULL CORDS	(893.00)
STOP REQUEST AT REAR DOOR	INCLUDED	NOT REQUIRED	(50.00)
ADDITIONAL STOP REQUEST LAMP AT DASH	NOT INCLUDED	REQUIRED	35.00
NYLON GRAB STRAPS	NOT INCLUDED	NOT REQUIRED	-
SCHEDULE RACKS	(6) 3.875" X 7" X 1.5"	NOT REQUIRED	(60.00)
PASSENGER INFO STATION	NOT INCLUDED	OBIC 19/21 8P	309.00
PASSENGER WINDOWS	STD FRAME / TRANSOM	BONDED / TRANSOM	2,855.00
CEILING MTD FAREBOX LAMP	NOT INCLUDED	NOT REQUIRED	-
2-WAY RADIO & ANTENNA	PRE-WIRE	PRE-WIRE	-
DRIVERS SPEAKER	NOT INCLUDED	NOT REQUIRED	-
VOICE ANNUNCIATOR / ITS SYS	NOT INCLUDED	NOT REQUIRED	-
PLEASURE RADIO & ANTENNA	NOT INCLUDED	NOT REQUIRED	-
FAREBOX	NOT INCLUDED	GFI ODYSSEY	15,881.00
TRANSFER CUTTER	NOT INCLUDED	NOT REQUIRED	-
PASSENGER COUNTER	NOT INCLUDED	NOT REQUIRED	-
DESTINATION SIGNS	TWIN VISION AMBER (FRONT, CURB)	TWIN VISION AMBER (FRONT, CURB, REAR)	700.00
DASH MTD FRONT RUN SIGN	NOT INCLUDED	NOT REQUIRED	-
FLOORING MATERIAL	ALTRO TRANSFLOR	RCA RUBBER	(100.00)
ROOF HATCHES	(1) MANUAL	(1) MANUAL	-
EXTERIOR MIRRORS	8X15 2-PC, REMOTE, HEATED	8X15 2-PC, REMOTE, HEATED	-
DRIVERS DASH GAUGES	(2) INCLUDED	(5) REQUIRED	150.00
ADJUSTABLE PEDALS	NOT INCLUDED	NOT REQUIRED	-
EXTERIOR PAINT / GRAPHICS	WHITE BUS	3-COLOR BUS + GRAPHICS	5,055.00
MULTIPLEX ITS MODULE	NOT INCLUDED	NOT REQUIRED	-

PRICE VARIANCE
6/25/2014
SANTA FE, NM PIGGYBACK ON LEXINGTON, KY CONTRACT
(7) 35' LOW FLOOR CNG BUSES, SN: TBD

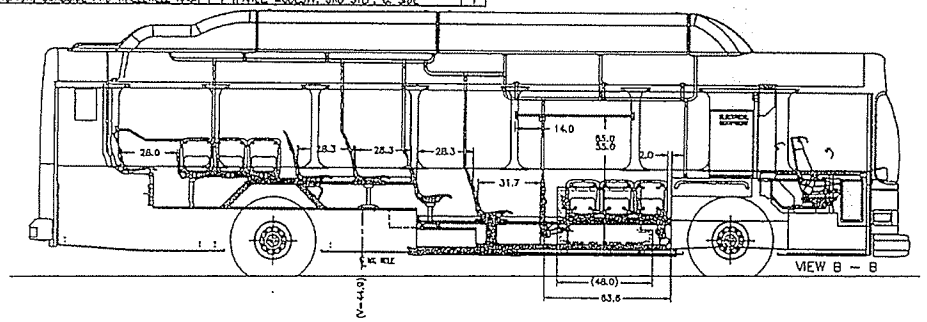
ITEM	LEXINGTON, KY	SANTA FE, NM	VARIANCE
FIRE SUPPRESSION SYSTEM	AMEREX V-25	AMEREX V-25	-
GAS DETECTION SYSTEM	SAFETY NET	SAFETY NET	-
BIKE RACK	NOT INCLUDED	MOUNTING BRACKETS	122.00
VIDEO SURVEILLANCE SYSTEM	VERINT (7) CAMERA	SEON (7) CAMERA	(2,453.00)
ADDITIONAL CAMERA	NOT INCLUDED	REQUIRED	450.00
TRAFFIC LIGHT PREEMPTION	NOT INCLUDED	NOT REQUIRED	-
MEDICAL AID KIT	NOT INCLUDED	24 UNIT	69.00
BLOODBORN PATHOGEN KIT	NOT INCLUDED	REQUIRED	35.00
EXT WARRANTY (CORROSION)	12 YR / 500,000 MILES	7 YR / 350,000 MILES	(500.00)
TRAINING	LEXINGTON CUSTOM	NOT REQUIRED	(1,708.00)

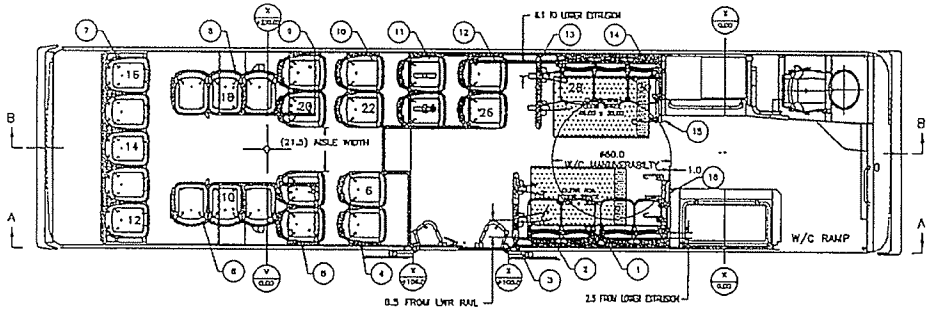
TOTAL SANTA FE, NM VARIANCES	31,425.00
LEXINGTON, KY 35' LOW FLOOR CNG BASE UNIT PRICE (MAY'13)	419,142.00
DELIVERY	2,820.00
SANTA FE, NM 35' LOW FLOOR BASE UNIT PRICE (MAY'13)	453,387.00
PPI 1413 ADJUSTMENT 229.8 (MAY'14) / 225.8 (MAY'13) = 1.77%	8,025.00
SANTA FE, NM 35' LOW FLOOR ADJUSTED PRICE	461,412.00
SPARE / TOOLING BUDGET	-
SANTA FE, NM 35' LOW FLOOR CURRENT PRICE (6/25/2014)	**461,412.00**

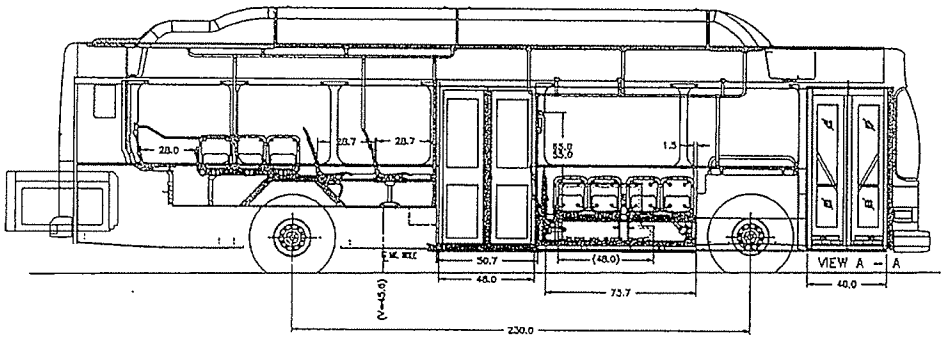
CONFIDENTIAL
This pricing information is intended only for the personal and confidential use of the recipient(s) to whom it was originally sent. If you are not an intended recipient of this information or an agent responsible for delivering it to an intended recipient, you are hereby notified that you have received this information in error, and that any review, dissemination, distribution, o copying of this message is strictly prohibited.

GILLIG PARTS	QTY	GILLIG PARTS	QTY	GILLIG PARTS	QTY
STRAPS, O/H GRAB	–	STANCHION, TRVS. @ 3RD STEP	2	STANCHION, REAR LONGITUDINAL	2
BAR, WINDOW, 56.0	1	STANCHION, TRVS. @ 1ST STEP TO 9.0 O/H DROP	1		
STANCHION, 1.0 SINGLE OFFSET FWD RD	1	STANCHION, TRVS. @ 2ND STEP	1		
STANCHION, STREETSIDE FWD WHEELWELL	1	STANCHION, W/C BARRIER	1		
STANCHION, CURBSIDE FWD WHEELWELL RACK	1	PANEL, MODESTY, 3RD STEP, C. SIDE	1		

REVISIONS					
SYM	PVH	ZONE	DESCRIPTION	ECL	DATE
A	P081		RELEASED FOR PRODUCTION	LOTUS	04/10/14







NOTES:

1. *TO MAXIMIZE OCCUPANT CRASH PROTECTION AND REDUCE THE POTENTIAL FOR SIGNIFICANT INJURY TO PASSENGERS SEATED IN THE FIRST FORWARD FACING SEATS IMMEDIATELY REARWARD OF THE ADA AREA, GILLIG REQUIRES THE PLACEMENT OF A BARRIER FORWARD OF THESE SEATS.*
2. ALL DIMENSIONS ARE IN INCHES.
3. FLOORING LAYOUT: SEE FL-68201R000.
4. THIS DRAWING IS TO BE USED FOR SEAT INSTALLATION. ALL OTHER GRAPHIC ARE SHOWN FOR REFERENCE ONLY AND THE FINAL DESIGN MAY VARY.

SEAT AND RESTRAINT NOTES:

10. SEATS & RESTRAINT BELTS MUST MEET FMVSS 209 & 302 STANDARDS.
11. GRAB HANDLE MATERIAL: ENERGY-ABSORBING.
12. SEAT INSERT: 1.25 BOTTOM AND .50 BACK PADDING.
13. CANTILEVERED SEATS SHALL HAVE NO SHROUDS.
14. W/C BELTS AND RETRACTORS: Q'STRAINT.
15. FOR EACH W/C LOCATIONS WITH FLOOR ANCHORAGE DISTANCES GREATER THAN 60 INCHES SHALL INCLUDE (2) 05-7580 Q'STRAINT WEBBING LOOPS. TOTAL QTY SHIPPED LOOSE: 2 (REQUIRED FOR CURBSIDE ADA AREA)
16. ALL SEATS WITH T-PEDESTALS SHALL HAVE AN OPEN CHANNEL DESIGN. ALL SEATS WITH DIMENSION E=6.12 SHALL HAVE 3.0 LONG MOUNTING SLOTS.
17. REF: FOR OTHER SEAT DETAILS NOT SHOWN. SEE PURCHASING ORDER SPECIFICATION SHEET.

ITEM NUMBER	VENDOR PART NUMBER	PASSENGER SEAT SIZE (S)	MODEL OVERLOOK (T) (C)	(G) GRAB HANDLE	(F) FLAT BACK PANEL	SEAT BELT CUP (T) (F)	NOTES AND COMMENTS
16		–	–	–	–	–	OPTION H, RH, FLOOR MOUNTED
15		–	–	–	–	–	OPTION H, LH, WHEELWELL MOUNTED
14		3	C	–	–	–	W/C FLIP-UP, AFT ARMREST, TOUCH PAD
13		–	P	G	–	1	W/C BARRIER, (2) PED, P1=10.00, P2=16.00, E=8.0, REMOTE DELI RH
12		2	C	G	–	1	
11		2	P	G	–	1	(2) PED, P1=9.42, P2=16.55, E=6.12
10		2	P	G	–	1	(1) PED, Po = 26.25, E=6.12
9		2	P	G	–	–	MOUNTED TO WHEEL WELL, MIN TRAVEL ±1.5
8		3	P	–	–	1	AFT ARMREST, E=6.12
7		3	C	–	–	–	SETTEE, (3) CENTER SEATS REMOVABLE
6		3	P	–	–	1	AFT ARMREST, E=6.12
5		2	P	G	–	–	MOUNTED TO WHEEL WELL, MIN TRAVEL ±1.5
4		2	P	G	–	1	(1) PED, Po = 26.25, E=6.12
3		–	P	G	–	–	W/C DRIVER, (2) PED, P1=12.0, P2=16.00, CROSS REF CONFIGURATION, REMOTE DELI RH
2		2	C	–	–	–	W/C FLIP-UP, TOUCH PAD
1		2	C	–	–	–	W/C FLIP-UP, AFT ARMREST, TOUCH PAD

30 PASSENGERS	PASSENGER SEAT SUPPLIER: AMERICAN SEATING CO. PASSENGER SEAT MODELS: INSIGHT 18.0 WIDE FWD FACING INSIGHT 17.0 WIDE AISLE FACING
PART CHANGE: 184289-184293 (05) (09/08/14)	SIGNATURE ON THIS DRAWING INDICATES CUSTOMERS APPROVAL OF LAYOUT AND AGREEMENT THAT SAME IS IN COMPLIANCE WITH CUSTOMER'S SPECIFICATIONS. ONCE SIGNED THIS DRAWING BECOMES A PART OF CONTRACT #: PURCHASE ORDER #: SIGNED BY: ACTING ON BEHALF OF AND WITH THE AUTHORITY OF
	ENGINEERING MANAGER: A — DATE: 04/10/14 DRAWN BY: N. HOM — DATE: 04/10/14

GILLIG DESIGN BULLETIN REQUIREMENTS: UNLESS OTHERWISE SPECIFIED		
DESCRIPTION:	DB NUMBER:	REV:
SETTEE:	DB 157.000	D
UPPER SECTION:	DB 157.001	C
CENTER SECTION:	DB 158.000	D
W/C RESTRAINT OPTION:	DB 152.014	AI
ADA CLEAR FLOOR SPACE:	DB 152.000	A
SEAT DIMENSIONAL SPEC:	DB 152.001	C

GILLIG LLC
HAYWARD, CA

KIT & DIAGRAM, SEAT
LF2010 35' X 102"

SANTA FE, NM

CAD SCALE: 1:51 — SIZE: B — SL-73100-184289

This drawing and the information contained thereon is submitted confidentially and is the property of The GILLIG LLC. Use, reproduction, or disclosure of the content of this drawing or any portion thereof for any purpose must be approved in writing by The GILLIG LLC.

Exhibit C

Assignment letter from South Bend, IN

City of Santa Fe, New Mexico
200 Lincoln Avenue, P.O. Box 909, Santa Fe, N.M. 87504-0909
www.santafenm.gov

Javier M. Gonzales, Mayor

Councilors:
Peter N. Ives, Mayor Pro Tem, Dist. 2
Patti J. Bushee, Dist. 1
Signe I. Lindell, Dist. 1
Joseph M. Maestas, Dist. 2
Carmichael A. Dominguez, Dist. 3
Christopher M. Rivera, Dist. 3
Ronald S. Trujillo, Dist. 4
Bill Dimas, Dist. 4

May 21, 2014

David Cangany, General Manager
South Bend Public Transportation Corporation (Transpo)
1401 South Lafayette Boulevard
South Bend, IN 46613

Dear Mr. Cangany,

We are requesting your approval to acquire seven (7) 35-ft low floor CNG buses from South Bend's unused allotment from the Lexington, KY contract with Gillig.

The purpose of this request and agreement is to allow the City of Santa Fe to purchase these buses utilizing the contract, terms and prices as established in the Lexington contract with Gillig. The City of Santa Fe will work with and pay Gillig directly, and, other than using your assigned options from the Lexington contract, there will be no involvement by Transpo or Lextran in this procurement.

If you are willing to extend the assignability of this contract to the City of Santa Fe, please sign and date your concurrence below and return to us, or respond with a confirmation letter of your own.

David Cangany (Signature) 5/22/14 Date

Thank you for your consideration.

Sincerely,

Jon Bulthuis
Transit Division Director

Exhibit D

Lexington, KY contract with Gillig

RECEIVED
MAY 28 2013

TRANSIT AUTHORITY OF LEXINGTON-FAYETTE URBAN COUNTY ~~GOVERNMENT~~ CONTRACT

This contract ("Contract") is made this 23 day of MAY, 2013 by and between the TRANSIT AUTHORITY OF LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, Lexington, Kentucky, a political subdivision organized and existing under and by virtue of the laws of the Commonwealth of Kentucky, ("Authority") and Gillig LLC , located at 25800 Clawiter Road, Hayward, California 94545, hereinafter called ("Contractor").

The parties, intending to be legally bound, hereby agree as follows:

ARTICLE I. CONTRACT.

A. Contract Documents. The agreement between the parties consists of the documents listed below ("Contract Documents"). For purposes of interpretation, in the case of any conflict between the terms and provisions of any of the Contract Documents, which documents are attached hereto and incorporated herein by reference, the order of interpretive priority shall be:

1. Contract
2. RFP 1302 Addendum #2, dated 4-5-2013
3. RFP 1302 Addendum #1, dated 3-25-2013
4. Request for Proposal No. RFP 1302, including Scope of Work, dated 2-25-2013
5. Signed Copy of Contractor's Proposal dated 4-15-2013 ("Contractor's Proposal").

B. Entire Agreement. The Contract Documents constitute the entire agreement between the parties hereto, any other prior written understandings or agreements or any prior or subsequent oral understandings or agreements made to the contrary notwithstanding. Neither party relies upon any promises or representations not set forth in the Contract Documents.

C. Amendment.

1. Except as provided in Article I, Paragraph C.2., below, any proposed change to this Contract shall be submitted to the Authority for its prior approval, and shall not become effective unless it is contained in writing signed by the General Manager of the Authority or, in his absence, by his duly authorized designee ("General Manager").

2. Contractor agrees that this Contract is subject to unilateral modification by the Authority to the extent necessary to comply with amendment of the federal, state or local regulations, which may govern this Contract. Written notice of such modification signed by the General Manager shall be provided to the Contractor.

ARTICLE II. GENERAL OBLIGATIONS.

A. Contractor's Obligations.

1. The Contractor shall sell, deliver, install or otherwise tender, the goods described as buses; all as more fully set forth in the Scope of Work. The terms and provisions of the Scope of Work are incorporated herein by reference, as though set forth verbatim.

2. The goods to be tendered pursuant to this Contract shall be in strict conformity, as determined by the Authority in its sole and absolute discretion, with all specifications and other requirements for such goods, which may appear in the Contract Documents.

3. The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services which may be necessary to completely perform all services pursuant to this Contract, all in strict accordance with the Contract Documents.

4. Time is of the essence in the performance of Contractor's obligations hereunder. The Contractor shall use due diligence in fully performing all of its obligations, including, without limitation, the satisfactory delivery of all goods to be sold.

B. Authority's Obligations.

1. The Authority shall purchase those goods described in the Scope of Work, actually delivered, performed or installed, for the price or at the rate defined in the Contractor's Proposal dated 4-15-2013 and included as part of Attachment A Scope of Work and at the time and in the manner provided for herein. The Authority's obligation to purchase shall be conditioned upon the acceptability of the goods tendered by Contractor, which the Authority in its sole and absolute discretion shall determine.

2. The Contractor shall submit invoices to the Authority in accordance with the Request for Proposal for the portion of work completed to the date of invoice. Upon receipt of the invoice, the Authority shall have up to 10 business days to approve the invoice. If the invoice is rejected or modified, the Authority will provide notice to Contractor within the 10 day approval period. Payment will be sent by the Authority to the Contractor within 30 days from the date of the invoice. Payment shall be sent to:

Gillig LLC
25800 Clawiter Road
Hayward, CA 94545

ARTICLE III.
CLAIMS AND COMPENSATION.

A. Maximum Compensation. The Authority will pay the Contractor in current funds for the performance/delivery of the scope of work, subject to authorized additions or deductions by "Change Orders" as provided in Contract Document Number 4, Request for Proposal No. RFP 1302, dated 2-25-2013.

B. Limitation on Claims. The Contractor shall, for the payment of all sums due under this Contract, look solely to the monies provided the Authority from tax revenues resulting from duly authorized taxes which shall now or hereafter be levied for the benefit of the Authority, and from grant contract funds, if any, which may actually be received by the Authority from the federal government under the Urban Mass Transportation Act of 1964, as amended, for the purpose of underwriting, in whole or in part, the Authority's costs pursuant to this Contract.

C. Disclaimer for Cost Overruns. It is expressly understood that the Authority shall be under no obligation whatsoever for any excess costs arising from changes, modifications or extra work orders not specifically approved by the Authority as evidenced by one or more writings signed by the General Manager, in which the excess cost or costs is specifically set forth.

ARTICLE IV.
TERM AND TERMINATION.

A. Term. The term of this Contract shall be for five (5) years with no possible extensions for an additional year, as specified in the Contract Documents. Said term may only be extended by agreement of the parties reduced to writing and signed by the General Manager or duly authorized designee.

B. Default.

1. If for any reason the Contractor shall fail to perform fully, timely and in proper manner its obligations under the Contract Documents, or if the Contractor shall breach any of the covenants, conditions or agreements contained in the Contract Documents, the Authority shall thereafter have the right to terminate this Contract by giving notice to the Contractor of such termination. In the event the Authority exercises its right hereunder to terminate the Contract, the Authority shall be obligated to pay for only acceptable goods delivered or installed prior to the date the Authority notifies Contractor of such termination, less the sum of (1) the amount of all damages suffered by the Authority by virtue of the Contractor's default, and (2) any amount by which the commercially reasonable cost of correcting the default or completing the work exceeds the unpaid portion of the amount which would have been paid hereunder but for such default. If the sum of (1), (2) and all amounts previously paid exceeds the value of the work performed and accepted by the Authority prior to the notice of termination, Contractor shall be liable to the Authority for such excess.

2. Notwithstanding the above, the Contractor shall not be relieved of any liability to the Authority for damages sustained by the Authority by virtue of any breach of contract or warranties by the Contractor for the purpose of set off or recoupment until such time as the exact amount of damages due the Authority from the Contractor is determined.

C. Convenience of the Authority.

1. The Authority may terminate this Contract at any time by a notice in writing, which shall specify the effective date thereof, from the Authority to the Contractor, at least 5 days before the effective date of such termination. In that event, any goods accepted by the Authority prior to the effective date of termination shall become the Authority's property and the Contractor shall be entitled to receive just and equitable compensation therefor; provided, nevertheless, that the amount of such compensation shall not, in any event, exceed the amount of the total contract price, as set forth in Article III, above, properly attributable to the goods so accepted.

2. Neither the acceptance, by the Authority, of any goods; the payment, by the Authority, for any goods; nor both acceptance and payment, shall be deemed to waive, to compromise, or to affect in any manner the liability of the Contractor for any breach of contract, of warranty, or both of contract and of warranty.

ARTICLE V.
CONTRACTOR'S REPRESENTATIONS AND WARRANTIES.

A. Congressional Delegates. The Contractor represents and warrants that no member of or delegate to the Congress of the United States shall be admitted to any share or part of this Contract or to any benefit arising therefrom.

B. Conflict of Interest. The Contractor represents and warrants that no member, officer or employee of the Authority or of a local public body during his or her tenure or one year thereafter shall have any interest, direct or indirect, in this Contract or the proceeds thereof.

ARTICLE VI.
CONTRACTOR COVENANTS.

A. Equal Employment Opportunities. In connection with the execution of this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, creed, religion, sex, sexual orientation, gender identity, disability, age, or national origin. The Contractor shall take steps to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, color, creed, religion, sex, sexual orientation, gender identity, disability, age or national origin. Such actions 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.

B. Disadvantaged Business Enterprises. In connection with the performance of this Contract, the Contractor will cooperate with the Authority in meeting its commitments and goals with regard to the maximum utilization of disadvantaged business enterprises and will use its best efforts to ensure that minority, women or other disadvantaged business enterprises shall have the maximum practicable opportunity to compete for subcontract work, if any, and for the supply of materials or services, if any, which may be necessary or desirable for the performance of this Contract.

C. Subcontracts. The Contractor shall not subcontract or otherwise transfer any part of or interest in this Contract without the prior written consent of the Authority. Any such transfer without prior written consent of the Authority shall be void and of no effect. All subcontractors included in the Contractor's proposal are hereby approved. Non-Professional temporary personnel agencies and vendors of standard materials and supplies are not considered subcontractors for the purposes of this Paragraph.

D. Nondiscrimination.

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, creed, religion, sex, sexual orientation, gender identity, disability, age or national origin. The Contractor will take steps to ensure that applicants are employed, and employees are treated during employment, without regard to their race, color, creed, religion, sex, sexual orientation, gender identity, disability, age or national origin. Such affirmative action shall include, but not be limited to, the following: employment upgrading, demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

2. All solicitations or advertisements for employees, placed by or on behalf of the Contractor, will state that all qualified applicants will receive consideration for employment without regard to race, color, creed, religion, sex, sexual orientation, gender identity, disability, age or national origin.

3. The Contractor will send a notice of its commitments under this Article VI, Paragraph D, to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding. The Contractor shall post copies of the notice in conspicuous places available to employees and

applicants for employment.

4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the relevant rules, regulations and orders of the Secretary of Labor.

5. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor. For purposes of ascertaining Contractor's compliance with such requirements, the Contractor hereby grants the Authority or its designated and duly authorized agent access to its books, records and accounts.

6. Contractor's non-compliance with this Article VI, Paragraph D shall constitute a material breach of this Contract. In addition to the remedies for breach provided for herein, Contractor may be declared ineligible for further Authority contracts or federally assisted construction contracts as provided for in Executive Order 11246 of September 24, 1965, as well as such other sanctions as may be imposed and remedies invoked thereunder, or under rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

7. The Contractor will include each of the Paragraphs of this Article VI in every subcontract or purchase order entered into by the Contractor in the performance of its obligations hereunder, unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Authority may direct to enforce such provisions, including sanctions for noncompliance. In the event Contractor becomes involved in, or is threatened with, litigation by a subcontractor or vendor as a result of complying with the Authority's directions, the Contractor may request the Authority to enter into such litigation to protect its interests thereby threatened.

ARTICLE VII.
RECORD KEEPING, AUDIT AND EXAMINATION.

A. Right to Audit and Examine Records. Contractor agrees that the Authority, the Comptroller General of the United States, or any of their duly authorized representatives, may inspect all of the business related properties of the Contractor, including but not limited to, materials, payrolls and other data and records regarding this Contract.

B. Retention Period. Contractor agrees to maintain all required records for at least three years after the Authority has made final payment hereunder and all other pending matters between the parties are closed.

C. Subcontracts. The Contractor shall include the provisions of this Article VII in every subcontract or purchase order entered into by the Contractor in the performance of its obligations hereunder.

ARTICLE VIII.
MISCELLANEOUS.

A. Notices. Any notice required to be given under the Contract shall be in writing, and deemed given upon deposit in the regular United States mail postage prepaid, as evidenced by the postmark date. Notice, specifying the effective date of any action taken, shall be sent to the party entitled to such notice at the following address:

To Authority:

Transit Authority of Lexington-Fayette Urban County Government
General Manager
109 West Loudon Avenue
Lexington, Kentucky 40508

To Contractor:

Gillig LLC
Joseph Policarpio
25800 Clawiter Road
Hayward, CA 94545

B. Waiver. The failure of the Authority to enforce any provisions of this Contract shall not constitute a waiver of the Authority's right to enforce that provision or any or another provision of this Contract in the future.

C. Governing Law. The parties further agree that the law of the Commonwealth of Kentucky shall govern any and all claims relating to or arising out of this Contract.

D. Severability. The invalidity or unenforceability of any provision of the Contract shall not affect any other provision hereof and if any particular provision is determined to be invalid or unenforceable, the remainder of this Contract shall be interpreted and construed as if such provision were omitted.

E. Captions. The paragraph captions contained herein are for reference only and shall not in any way affect the meaning or interpretation of this Contract.

F. Litigation. Any litigation between the parties must be brought in the Circuit Court of Fayette County, Kentucky, or to the extent permitted in the Federal District Court of the Eastern District of Kentucky. The Contractor shall include this provision verbatim in every subcontract or purchase order entered into by the Contractor in the performance of its obligations hereunder.

IN WITNESS WHEREOF, the parties to this Contract have set their hands to duplicate copies on the day and year hereinabove written with each copy to be considered an original.

TRANSIT AUTHORITY OF LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

By: _____
Rocky Burke
General Manager

Date: 5/23/13

ATTEST:

By: _____

GILLIG LLC

By: _____
Joseph Policarpio
Vice President

Date: MAY 21, 2013

ATTEST:

By: _____

Exhibit E

RFP # 1302

Addendum #2,

issued 4/5/2013

RECEIVED
APR 05 2013

April 5, 2013

RFP # 1302
FOR BUSES

ADDENDUM #2

The purpose of this addendum is to provide clarification of some of the specifications contained in RFP 1302. It should be noted that where deviations from the original specifications are allowed, the evaluation criteria of "Degree to which the specifications of the proposed vehicles meet or exceed Lextran's specifications" shall be judged based upon the original specifications, which are the preferred specifications for this procurement. This addendum also adds a requirement for proposers to provide an electronic copy of their proposal.

1. REQUESTS FOR CLARIFICATIONS RECEIVED FOR BUSES 35' AND OVER

Q: Section 3.1.8
The Proponent requests approval to provide 75 dBA with A/C off and 78 dBA with A/C on at the driver's area.
A: This request is approved.

Q: Section 3.2.9
The proponent requests approval to provide for the rear upper area to have an interior headroom of 75 inches and for the centerline of the window seat to have headroom no lower than 61 inches. The headroom shall be 48 inches when measured from the rear-most sitting area of the rear bench to the PLC enclosure directly above. The access panel directly above the rear bench does not require padding.
This feature is inherent to the design of the proposed bus and has proven successful and reliable in service. Furthermore, the Proponent believes that there are no risks of passengers striking their head due to the proposed headroom dimensions.
A: This request is approved.

Q: Section 3.6.1
The Proponent requests approval to provide Cummins supplied spin-on type filter with one time release corrosion inhibitor additive feature.
As this is mandated and supplied by Cummins, it is inherent to the design of the bus.
A: This request is approved.

Q: Section 3.9.1
The Proponent requests approval to provide a bus that does not have gauges in the engine compartment. Instead, these gauges is located on the driver's instrument panel. In addition, the engine compartment is equipped with an engine switch box which includes a CAN communicator gauge. This gauge provides details on engine oil pressure, water temperature, transmission temperature and functions as a tachometer.
A: This request is denied.

Q: Section 3.13.2
The Proponent requests approval to provide a fuel tank constructed of cross-linked polyethylene which still contains the necessary baffles required to control the moving of the liquid inside the tank.
A: This request is denied.

Q: Section 3.13.3
The Proponent requests for approval to provide hoses to the engine that are 16.5" long and unsupported. The hose is rigid and fixed to the end and therefore requires no support.
A: This request is approved.

Q: Section 3.13.1
The Proponent requests approval to provide the CNG fuel filler access door top edge to be located approximately 53.5 inches and the bottom edge about 42 inches from the ground. Please note that this is a standard installation on the proposed buses.
A: This request is approved.

Q: Section 3.13.3
The Proponent requests approval for unloading all of the fuel from the storage cylinders in approximately 3 hours. This is due to an excess flow feature in the solenoid valve that is in each of the cylinders; if the flow is too excessive the regulator will automatically shut down. (Inherent safety feature). The time will be dependent upon facility and specific rate of controlled discharge.
A: This request is approved.

Q: Section 3.18.1, 3.69
The Proponent requests approval to provide a coach interior which is compliant to standards of FMVSS 302 (or CMVSS). Docket 90 is a recommended standard only, and is not a requirement. The proposed coach is designed and manufactured in accordance with all applicable FMVSS 302 for fire safety and smoke emissions regulations.
A: This request is approved.

Q: Section 3.1.9
The Proponent requests approval to provide 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.
Interior and exterior structural components are subject to The Proponent's extensive standard corrosion protection procedures.
The proposed structure has been proven successful and reliable in service and is provided with a 12-year structural warranty.
A: This request is approved.

Q: Section 3.2
The Proponent requests approval to provide a crane hook with a 1.25 in. (31.8 mm) throat.
A: This request is approved.

Q: Section 3.21
The Proponent requests approval to provide an adapter, which fits into the structure of the bus to jack up the bus. This will ensure the safety of the person(s) performing the operation.
A: This request is approved.

Q: Section 3.26.3
The Proponent requests approval to provide first step height of 10 inches kneeled (four (4) inches from the standard ride height of 14" inches) at the front entrance of the bus. The rear of the bus does not kneel and is a comfortable14 inches.
This design is inherent to the bus being offered.
A: This request is approved.

Q: Section 3.31.1
The Proponent requests approval to provide disc brakes without the visible stroke indicators as this feature is not applicable to a disc brake system.
The brake chamber pushrod is totally enclosed and sealed against the caliper, therefore not visible. This is done to improve reliability of the brake system.
A: This request is approved.

Q: Section 3.31.2
The Proponent clarifies that the lining wear based on axle load and single tire versus dual tire from front to rear axle makes rear axle friction material wear faster than the front axle friction material.
Also the braking is initiated at both axles simultaneously which also provides stability control of the vehicle as defined under FMVSS121 Section 5.3.6.
The Proponent requests approval to provide the system as described above.
A: This request is approved.

Q: Section 3.31.4
The Proponent requests approval to provide M.A.N. disc brakes with ABS on the proposed bus. The disc brake system does not use S-Cam system or automatic slack adjusters.
The M.A.N. disc brake axles are equipped with MGM type 20 front brake chamber and MGM MJB 2024ET753 rear brake chambers. The rotor diameter is 17inches, the swept area is 636.4 SQ inches, and the pad area is 31 SQ inches. The brake provided is common to front and rear wheels.
Manufacturer...MGM Brakes
Type..... 24L
Maximum Operating Pressure
.....130.5 psi (9.0 Bar)
Air Volume at Full Stroke (100 psi)
.....58.7 cu. in. (963 cc)
Maximum Stroke...2.5" (64 mm)
M.A.N. has advised The Proponent that the rotor disc may be machined on either side, but the overall thickness of the disc cannot be less than 37 mm. Discs less than 37mm thick have to be replaced.

The proposed disc brakes will greatly reduce the life-cycle costs over the anticipated 12 year service life of the buses being proposed.
The proposed buses will have ABS and ATC as per your request.
Please note that this feature (disc brake) is inherent to our proposed bus design.
A: This request is approved.

Q: Section 3.31.5
The Proponent requests approval to provide our standard configuration which incorporates a valve that will pop out when the pressure in the system drops below (40) PSI.
A: This request is approved.

Q: Section 3.33
The Proponent requests approval to delete the requirement of retained caps. The pressure relief valve and fillers are not required and not provided. If required, retained caps can be provided for the engine compartment air connection.
A: This request is approved.

Q: Section 3.33.3
The Proponent requests approval to provide the following flexible synthetic rubber lines with standard crimped end fittings manufactured by Manuli Rubber Industries and Aeroquip. Equator 1 (EQ1) / Equator 2 (EQ2) / 2807 PTFE / GH100, to accommodate the different ratings as required.
A: This request is approved.

Q: Section 3.33.3
The Proponent requests approval to provide a supporting interval for both rigid and flexible lines of 30 inches or less.
A: This request is approved.

Q: Section 3.33.4
The Proponent would like to clarify that the air tanks are located near the ceiling on the interior of the bus with drain lines leading to remote drain valves. The tanks are not fitted with clean out plugs. The Proponent can supply four (4) drain valves conveniently located approximately at the lower edge of the vehicle.
The Proponent requests approval to provide the air system as described above and notes that the system is inherent to the proposed bus.
A: This request is approved.

Q: Section 3.33.5
The Proponent requests approval to provide the air dryer located in the rear right-hand area forward of the rear wheel-well.
A: This request is approved.

Q: Section 3.36.1

The Proponent requests approval to provide a heavy duty 3/16" polyethylene plastic enclosure with a battery tray constructed of polyethylene plastic mounted on a stainless steel sub-frame for support. The tray easily slides out on stainless steel rollers.
The polyethylene plastic tray and enclosure is a weight initiative reduction of approximately nine (9) pounds (4.08 Kg).
The ventilated battery compartment is equipped with bottom drain holes. The compartment is by no means air tight and a smoke test would serve no purpose in this compartment
A: This request is approved.

Q: Section 3.36.1
The Proponent would like to clarify that the cumulative voltage drop will not exceed 1.0 volts on any circuit, as measured from the initiating source to the load and from the load to ground.
The voltage drop is measured from the generator to any electrical power bars on the bus which shall not exceed approximately one (1) volts at its' maximum loads.
The Proponent requests approval to provide as described above.
A: This request is approved.

Q: Section 3.36.3
The Proponent requests approval to provide T-splices for power cables on limited applications. The T-splices are crimped and soldered. On each end a heat shrink is applied then encapsulated in an over mold covering.
The T-splices are used at the batteries, the starter/alternator and at strategic points in the bus to minimize power cable congestion throughout the wiring paths and eliminate the stacking of electrical connections in high current applications.
A: This request is approved.

Q: Section 3.40.5
The Proponent requests approval to provide an instrument panel which features integrated inputs, outputs, gauges, LCDs, tell tales and user buttons controlled by the Vansco system.
There are two (2) air pressure gauges in 40' bus. Up to 31standard tell tales illuminate on dash. Additional selected tell tales can be programmed to display on LCD screen.
This configuration is the Proponent's standard offering on the proposed bus.
A: This request is approved.

Q: Section 3.41.3
The Proponent requests approval to provide an operator storage box located behind the operator's seat with dimensions of 19.5" x 12" x 9.5". Please note that this box is tapered to accommodate the driver's seat recline angle. Due to space limitation, it will provide approximately 2223 cubic inch capacity.
Please note there is a space limitation installing a larger box. A second driver box is located above the driver seat as well.
A: This request is approved.

Q: Section 3.46
The Proponent requests approval to provide Arow Global framed window with fore and aft sliding sashes as this is the only offering available from the Supplier.

A: This request is approved.

Q: Section 3.48
The Proponent requests approval to provide RLF roof mounted HVAC system for the diesel and diesel hybrid and the T15 rear mounted HVAC for the CNG due to space constraints on the roof.
A: The rear-mount system as specified in the RFP is the preferred option. Proposers offering a roof-mounted option shall be at a disadvantage in the evaluation criteria of Degree to which proposed vehicles meet or exceed Lextran's specifications.

Q: Section 3.48
The Proponent requests approval to provide Thermo King conventional non-electric HVAC system.
A: This request is approved.

Q: Section 3.50.5
The Proponent requests approval to provide air directly to the driver ducted from the main evaporator outlet. This is possible due to the proximity of the HVAC unit and the position of the air vents to the bus interior. Air will always be available through a control vent to the upper left of the driver.
There are three (3) sources of air to the driver from the Driver's Panel Louver - 448 cfm of air will be available.
A: This request is approved.

Q: Section 3.65.1
The Proponent requests approval to provide "paint that shall be applied in accordance" with The Proponent's standard Quality Assurance Paint Appearance Standards.
A: This request is approved, provided it meets the imperfection standards as listed in the RFP.

Q: Section 3.67.4
The Proponent requests approval to provide headlights which are a combination of LED for low beam and high intensity halogens for the high beams.
Please note that the proposed headlamp is not roved and does not have a bezel.
A: This request is approved.

Q: Section 3.69
The Proponent requests approval to provide the interior side wall panels retained by adhesives. Ceiling panels are retained with standard hard ware, cross strips and the overhead interior lighting assemblies.
A: The panels must be replaceable.

Q: Section 3.69.1
The Proponent requests approval to provide a communications box, Secure Diagnostic Station (SDS) box, located on the wheelhouse where the forward wall of the box acts as the upper portion of the barrier and the wheelhouse as the lower portion separating the operator from the street-side front passenger seat there by precluding the need for a separate barrier. The SDS box

is made of fiberglass and painted black to minimize the glare and reflections that may impact the driver's sightline(s).
A: This request is approved.

Q: Section 3.74
The Proponent requests approval to provide air powered door system at air pressure between 85 to120 psi. This is as supplied by Vapor door.
A: This request is approved.

Q: Section 3.74.2
The Proponent requests approval to provide a full one-piece design glazing on each panel on the front and rear door. This provides the driver and passengers with an improved viewing area. The Proponent has standardized on the Ameriview panels to maximize the driver's visibility from the seated position.
A: This request is approved.

Q: Section 3.74.2
The Proponent requests approval to provide vapor slide Glide Ameriview for the front and exit door as Vapor door does not offer Cityview due to the door geometry of the proposed buses.
A: This request is approved.

Q: Section 3.74
The Proponent requests approval to provide vapor slide glide wide exit door with clear width of 40.5".
A: This request is approved.

Q: Section 3.74
The Proponent requests approval to provide our swing door with clear width 27.7 between handles and 32" between panels.
A: This request is approved.

Q: Section 79.1
The Proponent requests approval to provide a Safety Vision camera system.
A: The successful proposer shall install a camera system, or the wiring for a camera system, as per the requirements of each of the agencies participating in this procurement.

Q: Section 2.4.1
The Proponent requests the following language be inserted in this section:
If the bus passes these tests or if the Agency does not notify the Contractor of non-acceptance within 15 calendar days after delivery of the bus, then acceptance of the bus by the Agency shall be deemed to have occurred on the 15th day after delivery of the bus. Acceptance shall occur earlier if the Agency notifies the Contractor of early acceptance of the bus or places the bus in revenue service.
A: This request is approved.

Q: General Provisions #33

The proponent requests the language be changed as follows:
The Contractor shall comply with all Federal, State, and local licensing and/or regulatory requirements (including permits) for the **manufacture and sale of transit buses.**
A: This request is approved.

Q: General Provisions #27
The Proponent requests the indemnifcation language be changed as follows:
In matters under the sole control of the contractor the Contractor agrees to protect, defend, indemnify and hold the Authority, its officers, employees and agents free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees (including attorney's fees) or other expenses or liabilities of every kind and character arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings or causes of action of every kind and character in connection with or arising directly or indirectly **out of the negligent acts or omissions of the Contractor.** Without limiting the generality of the foregoing, any and all such claims, etc., relating to personal injury, infringement of any patent, trademark, copyright (or application for any thereof) or of any other tangible or intangible personal or property right, or actual violation of any other tangible or intangible personal or property right, or actual violation of any applicable statute, ordinance, administrative order, rule or regulation, or decree of any court, shall be included in the indemnity hereunder.
A: Lextran will not make any final decisions regarding this wording at this time. Upon contract award, Lextran will negotiate the wording of this clause, if necessary, with the successful proposer. Proposers may notate in their proposals any issues they have with Lextran's standard terms as outlined in the RFP. However, proposers should note that many of these terms are mandated by the FTA and Lextran's ability to negotiate or change these terms may be limited.

Q: General Provisions #42
The Proponent requests the following language be added to 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 date of the submission of the Contractor's proposal, such price adjustment shall be negotiated in good faith by the Agency and the Contractor.
A: Lextran will not make any final decisions regarding this wording at this time. Upon contract award, Lextran will negotiate the wording of this clause, if necessary, with the successful proposer. Proposers may notate in their proposals any issues they have with Lextran's standard terms as outlined in the RFP. However, proposers should note that many of these terms are mandated by the FTA and Lextran's ability to negotiate or change these terms may be limited.

Q: General Provisions #7
The Proponent requests the following language be added to the contract:
The Agency and its representatives and agents agree to enter into a confidentiality agreement with the Contractor prior to commencing an audit, review or analysis in order to protect and maintain the confidentiality of the Contractor's information.
A: Lextran will not make any final decisions regarding this wording at this time. Upon contract award, Lextran will negotiate the wording of this clause, if necessary, with the successful proposer. Proposers may notate in their proposals any issues they have with Lextran's standard

terms as outlined in the RFP. However, proposers should note that many of these terms are mandated by the FTA and Lextran's ability to negotiate or change these terms may be limited.

Q: Section 2.3.1
The Proponent requests the following language be added to the contract:
If the Contractor is delayed at any time during the performance of the work by the neglect or failure of the Agency or by delay or failure of the Contractor caused by an event beyond its control, including, but not limited to, natural disasters, acts of war or terrorism, labor shortages, strikes or lock-outs or shortages or loss of transportation, then the time for completion of the work and/or the delivery dates shall be extended by the Agency by a reasonable period of time after such event of delay has ended in order that the proponent may complete the work or deliver the buses.
A: Lextran will not make any final decisions regarding this wording at this time. Upon contract award, Lextran will negotiate the wording of this clause, if necessary, with the successful proposer. Proposers may notate in their proposals any issues they have with Lextran's standard terms as outlined in the RFP.

Q: RFP Attachment A
The Proponent requests approval to ship all capital spares separately. All spares are shipped directly to the warehouse of your choice.
A: Attachment A was provided for informational purposes only to let potential proposers know what specification Lextran has used on recent bus purchases. It does not contain the specifications for this procurement.

Q: Section 3.70
The Proponent requests approval to provide the standard system where only safety systems (i.e. Cummins, Transmission, Fire Suppression and Methane Detection) are to be wired straight from the battery. All other systems to be switch powered. This is inherent to the design of the bus and the product offered.
A: This request is approved.

2. REQUESTS FOR CLARIFICATIONS RECEIVED FOR BUSES 30' AND UNDER

Q: Section 3, 3.15.1, 3.19, 3.1.3
The Proponent requests approval to provide a bus with a minimum expected life of 10 years or 350,000 miles, whichever comes first.
A: This request is denied.

Q: Section 3.2.2
The Proponent requests approval to provide a bus with a width of 96 inches.
A: This request is approved.

Q: Section 3.26
The Proponent requests approval to provide a bus with the following angles:
Approach: 8 deg (30') & 8 deg (35')
Breakover Angles: 7 deg (30') & 5 deg (35')

Departure: 9 deg (30') & 9 deg (35')
A: This request is approved.

Q: Section 3.2.10
The Proponent requests approval to provide a minimum clear aisle width between pairs of transverse seats with all attached hardware of 19.7".
A: This request is approved.

Q: Section 3.3.4.1
The Proponent's goal is to achieve the highest mileage possible. However, driver habits, terrain, environmental conditions, plus the operating profile directly impact fuel economy. As The Proponent has no control over these factors, it cannot guarantee mileage.
The Proponent requests approval.
A: This request is denied.

Q: Section 3.6.1
The Proponent requests approval to provide a hydraulic driven radiator and charge air cooler fan.
A: This request is denied.

Q: Section 3.6.1
The Proponent request approval to provide a bus with the lower edge of the radiator and charge cooler at a height of no less than 1 ft 3 inches.
A: This request is denied.

Q: Section 3.9.1
The Proponent requests approval to provide a bus that does not have gauges in the engine compartment. Instead, these gauges can be accessed via the VDO LCD panel (in diagnostic mode) located on the driver's instrument panel.
A: This request is denied.

Q: Section 3.13.1
The Proponent requests approval to provide a bus that is not capable of running Biofuel (B20). The intended fuel is ultra low sulpher diesel.
A: This request is approved.

Q: Section 3.21
The Proponent requests approval to provide a bus that does not have jacking pads.
A: This request is approved.

Q: Section 3.23.1
The Proponent requests approval to provide a bus that does not have a lateral slope at the exit door floor. Experiance has shown that the majority of road surfaces are crowned/graded, thus water pooling has not been an issue.
A: This request is approved.

Q: Section 3.25.2

The Proponent requests approval to not provide a turntable. This statement is only applicable to articulated buses.
A: Articulated buses are not a part of this procurement.

Q: Section 3.27.1
The Proponent requests approval to provide Steel wheels with a powder coated finish.
A: This request is denied.

Q: Section 3.27.2
The Proponent requests approval to provide Michelin 265/70R x 19.5 XZE 2+ tubeless radial ply tires.
A: Lextran shall supply the tires to be used. Participating agencies may also supply tires.

Q: Section 3.31.1
The Proponent requests approval to provide a bus that uses sensors to determine low pad life. A dash indicator is set in a low pad life event. Pad wear cannot be determined by visible inspection of push rods.
A: This request is denied. For Lextran, will not apply, using disc brakes.

Q: Section 3.31.2
New Flyer requests approval to provide a bus that does not have automatic traction control.
A: This request is approved for Lextran. However, other agencies, depending on their climate, will require this. Proposers should provide pricing for buses with and without traction control where applicable.

Q: Section 3.31.4
The Proponent requests approval to provide a bus that utilizes a disc brake system, rather than drum brakes.
A: This request is approved.

Q: Section 3.36.1
The Proponent requests approval to provide a bus with a battery cut-off switch located on the dash. The switch is a Kissling 500 amp relay.
A: This request is denied.

Q: Section 3.40.5
The Proponent requests approval to provide instruments, indicators and alarms in accordance to the attachments.
A: This request is approved.

Q: Section 3.40.6
The Proponent requests approval to provide accelerator & Brake Pedals without a wear-resistant, nonskid, replaceable material such as AS-150 non skid treatment or full metal jacket.
A: This request is denied.

Q: Section 3.41.3

The Proponent requests approval to provide a bus with a driver's storage area of 980 cubic in.
A: This request is approved.

Q: Section 3.43
The Proponent requests approval to provide a bus with a USSC Evolution driver's seat.
A: This request is approved.

Q: Section 3.46
The Proponent requests approval to provide a bus with a nominal side window glazing thickness of 1/5" (5mm).
A: This request is approved.

Q: Section 3.46
The Proponent requests approval to provide a flush glass (bonded) driver's side window.
A: This request is approved.

Q: Section 3.47
The Proponent requests approval to provide flush glass (bonded) passenger side windows.
A: This request is approved.

Q: Section 3.47.4
The Proponent requests approval to provide Passenger windows with 50% luminous transmittance.
A: This request is approved.

Q: Section 3.48
The Proponent requests approval to provide a bus with a roof mounted HVAC unit.
A: Rear-mounted is the preferred option, as stated above.

Q: Section 3.50.5
The Proponent requests approval to provide air directly to the driver ducted from the main evaporator outlet. This is possible due to the proximity of the HVAC unit and the position of the air vents to the bus interior.
A:This request is approved.

Q: Section 3.51
The Proponent requests approval to provide a bus with reusable air filters.
A: This request is approved.

Q: Section 3.62.1
The Proponent requests approval to provide a bus without splash aprons.
A: This request is approved.

Q: Section 3.63.1
The Proponent requests approval to provide access to the engine oil and transmission fluid to be performed by opening the main engine access door located centrally, at the rear of the bus.

A: This request is approved.

Q: Section 3.64
The Proponent requests approval to provide a bus with integrated molded bumpers. The molded GRP fiberglass pieces(supported by a steel frame) are easily replaceable and provide an enhanced aesthetic appeal to the bus with color options available. Additionally, a weight savings is realized compared to buses with traditional style bumpers. The molded bumpers(front and rear) may exhibit damage when impacted with a flat perpendicular barrier at any speed.
A: This request is approved.

Q: Section 3.64.2
The Proponent requests approval to provide a bus without bike rack mounting provisions.
A: This request is denied.

Q: Section 3.67.6
The Proponent requests approval to provide a bus without LED lamps in the engine compartment.
A: This request is denied.

Q: Section 3.68
The Proponent requests approval to provide a bus without additional anti-graffiti/vandalism treatments on interior surfaces.
A: This request is approved.

Q: Section 3.69
The Proponent requests approval to provide a bus without tamper resistant fasteners.
A: This request is denied.

Q: Section 3.69.10
The Proponent would like to clarify that LED interior lights are being offered, not fluorescent.
A: That is correct.

Q: Section 3.72.4
The Proponent requests approval to provide passenger seating without vandal-resistant inserts.
A: This request is approved.

Q: Section 3.72.8
The Proponent requests approval to provide a bus with aisle width at seated passenger hip height of no less than 19.7 in.
A: This request is approved.

Q: Section 3.77.1
The Proponent request approval to provide a bus that does not retain 11 in. High Advertising media cards near the juncture of the bus ceiling and the side walls. However, space is available in this area for decals just not cards. Sizes of decals are still being determined.
A: This request is denied.

Q: Section 3.78
The Proponent requests approval to provide a bus without touch tape passenger signals. Instead the bus comes equipped with pushbutton switches at every applicable vertical stanchion in the passenger area.
A: This request is approved.

Q: Section 3.79.2
The Proponent requests approval to provide a public address system with 4 speakers in the passenger compartment, 1 speaker in the driver's area & 1 exterior speaker.
A: This request is approved.

Q: Section 3.79.4
The Proponent request approval to provide a boom mic and not a handset for the driver.
A: This request is approved.

Q: Section 3.79.1
The Proponent requests approval to provide a bus equipped with a Safety Vision camera system.
A: The successful proposer shall install a camera system, or the wiring for a camera system, as per the requirements of each of the agencies participating in this procurement.

Q: Section 3.79.1
The Proponent requests approval to provide a bus without a camera system.
A: The successful proposer shall install a camera system, or the wiring for a camera system, as per the requirements of each of the agencies participating in this procurement.

Q: Section 3.79.3
The Proponent requests approval to provide a bus without an APC system.
A: The successful proposer shall work with each of the agencies participating in this procurement as to how they wish to handle the issue of APC systems.

Q: Section 3.8
The Proponent requests approval to provide a bus without an ITS system.
A: The successful proposer shall work with each of the agencies participating in this procurement as to how they wish to handle the ITS system.

3. ADDITIONAL PROPOSAL SUBMISSION REQUIREMENT

The RFP requires proposers to submit one (1) original and four (4) copies of their proposals. Lextran requests that proposers also include, as part of their submission, an electronic copy of their proposal. Electronic copies of the proposals should be emailed by 3:00 PM on April 17, 2013 to Keith Srutowski at ksrutowski@lextran.com. Please note that Lextran's email server cannot send or receive larger documents. Proposers may need to break their electronic submissions into smaller multiple smaller documents and email them separately in order for them to successfully transmit.

Exhibit F

RFP # 1302

Addendum #1,

issued 3/25/2013

March 25, 2013

RFP # 1302
FOR BUSES

ADDENDUM #1

The purpose of this addendum is to provide the meeting notes from the pre-proposal conference that was held on 3-14-2013 at the Lextran Training Center as well as to answer questions that have been received in response to RFP 1302 for buses. There is also an announcement of other agencies that will be a part of this joint procurement. It also contains a clarification for the minimum and maximum quantities involved in this procurement as well as the anticipated purchase schedule and an updated liquidated damages amount.

1. PRE-PROPOSAL CONFERENCE MEETING NOTES

The pre-proposal meeting for RFP 1302 for buses was held at 1:00 PM on March 14, 2013 at the Lextran Training Center located at 105 Spruce Street, Suite 125, Lexington, Kentucky 40507. The following individuals were in attendance:

Jim Ryan - Gillig
Jared Forte – Lextran
Glenda Shoopman – Lextran
Keith Srutowski – Lextran

Mr. Srutowski reviewed the key Dates for the RFP:

- Final date for questions – March 18, 2013
- LexTran response to questions – March 25, 2013
- Proposal due date – April 17, 2013 at 3:00 PM
- Interviews (if necessary) – April 24, 2013
- Notice of award – May 16, 2013

It was noted that nothing said in the pre-proposal conference will modify the solicitation. Only a written addendum can modify the solicitation. It was also noted that the notes from the meeting would be included as part of the addendum to be issued that will cover all submitted questions.

Next Mr. Srutowski reviewed the documents to be submitted with proposals:

- Letter offering the proposal signed by an authorized representative of the company
- At least 3 references (Ms. Shoopman asked that all references have accurate phone numbers as well as emails addresses as she does call all references provided. She also asked that references be notified that we will be contacting them.)
- Required forms
  - Vendor Information Page
  - Buy America Certification
  - Certification of Restrictions on Lobbying

- Certification Regarding Debarment and Suspension
- Non-Collusion Affidavit
- Certification of Procurement Integrity
- Addenda Acknowledgement Form

Mr. Srutowski then reviewed how proposals are to be evaluated.

- Cost of the vehicles
- Degree to which the proposed vehicles meet or exceed Lextran's specifications
- Delivery time
- Qualifications and experience of the firm and/or individuals
- References

Next Mr. Srutowski explained that, as a recipient of FTA funds, Lextran is required to try to utilize disadvantaged business enterprises (DBEs) for a percentage of our federally-funded procurements. Lextran's three year DBE goal is 11.01%. This procurement does not have any specific DBE goal in place.

Next Mr. Srutowski reviewed two questions that had been submitted regarding the RFP.

Q: There does not appear to be a minimum/maximum clause in the RFP.

A: The RFP does state the maximum quantities for each participating agency. The minimum was assumed to be given as zero. For the purpose of clarity the addendum will contain a minimum/maximum clause, containing the following information:

Lextran in Lexington, KY – Minimum quantity – 0; Maximum quantity – 35

TRANSPO in South Bend, IN – Minimum quantity – 0; Maximum quantity – 40

Owensboro Transit System in Owensboro, KY – Minimum qty – 0; Maximum quantity – 5

**PLEASE NOTE: This information has since been updated again. Refer to Sections 3 and 4 of this addendum for the most up-to-date information.

Q: The RFP contains specifications for articulated buses. Is Lextran looking for articulated buses?

A: Section 3.2.1 of the RFP (Bus Length) lists the various bus lengths that may be included in this procurement, including 60-foot articulated buses. There are also subsequent references in the specifications to articulated buses. The participating agencies will not be ordering any buses of this length. It is not necessary for proposers to include articulated buses in their pricing.

The meeting was then opened to questions from the attendees.

It was asked what technology, i.e. passenger counters, MDTs, etc., would be put on the buses. Mr. Forte responded that all technology items are through Avail Technologies, as listed in the RFP. Proposers can contact Avail directly to get the information they may need for pricing these components. These components include MDTs, a modified Verint camera system, automated passenger counters, automated stop announcements, and destination signs. Lextran would like proposers to provide a separate line item quote for the Avail technology piece. The installation of these items should take place at the proposer's facility.

It was asked if Lextran is providing pricing sheets as part of the RFP package. Mr. Srutowski responded that pricing sheets are not part of the package and proposers should use their own pricing sheets. Proposers should ensure that they list any options separately.

It was noted that there were a number of questions regarding some of the details of the specifications, but it was agreed that it would be best for those questions to be submitted in writing.

Hearing no further questions, the meeting was adjourned.

2. QUESTIONS RECEIVED

Q: Spec section 3.1.6 page 13
Is Lextran able to provide details on the training requirements? Is supplier component training required (i.e. Cummins or Allison training) or is the training for general maintenance and operation? Would Lextran consider training priced outside of the bus so that courses could be selected and paid for as used?
A: Training shall include at a minimum classes on basic familiarization, HVAC systems, electrical systems, transmission, diesel engine, CNG engine, hybrid system (engine/transmission/battery, etc.) fuel system, wheelchair ramp, and any other course that may be required by the Agency that deals with the maintenance of the bus. The training shall include at least eight (8) hours of training for the transmission and eight (8) hours of training for the engine.

Q: Spec Section 3.65.1 page 84-85
Can Lextran confirm the desired paint scheme and color codes so that the proponent can accurately price the bus with the desired paint scheme? If not, could Lextran provide direction on what should be priced (i.e. white bus)?
A: Proposers may price a base color of white. Each agency, after contract award and during the pre-build meetings that occur, shall work with the successful proposer on their particular paint scheme and any additional up-charge for that scheme.
For WRTA specifically – The final finish surface shall be coated with PPG – DelFleet Evolution Paint System or an approved equal. The exterior paint shall be a polyurethane enamel finish meeting all state and federal health and safety regulations. The base color shall be "white". The ordering agency will provide the required exterior vinyl graphics upon request. Decals, logos, numbers and other special signage specified by the ordering agency shall be applied to the inside and/or outside of the bus as required.
FOR MATS specifically, MATS will be seeking a white bus and will perform decaling locally upon arrival of the bus.

Q: Spec Section 3.48 page 76
Will Lextran consider roof mounted A/C units if they are inherent to the design of a proponent's bus offering and may preclude them from bidding? Is a rear unit considered a mandatory requirement?

A: The rear-mount system as specified in the RFP is the preferred option. Proposers offering a roof-mounted option shall be at a disadvantage in the evaluation criterion of Degree to which proposed vehicles meet or exceed Lextran's specifications.

Q: Section 2.4.4 – Gillig requests deletion of the requirement for the manufacturer to reimburse towing charges. The bus manufacturer has no control over this decision (tow/repair on site), and due to widely varying guidelines and criteria involved, it is impossible to predict the cost impact in the bid process. Gillig, as well as other manufacturers, have in the past experienced major administrative problems and costs regarding towing charges. Additionally, as a clarification, Gillig cannot pay any towing beyond the basic bus warranty, as this would increase the unrecoverable costs even further.
A: This request is approved.

Q: Section 3.1.5 – Gillig agrees that all coaches to be manufactured within a given production run will be duplicates in design, manufacture, installation, etc., as required by this section. However, since this solicitation includes an option for additional coaches, Gillig requests approval that any such optional coaches may include regulated or legislated changes or product improvements initiated by Gillig and/or vendors without obligation to retrofit previous builds. For example, the engine manufacturer might change engine emission components in order to assure a more reliable system or to meet regulatory requirements that might have changed. Gillig agrees to advise the Agency with regard to any significant variations of design or cost between coaches in the basic award and those exercised as part of an option.
A: This request is approved.

Q: Section 3.1.6 – Gillig wishes to advise the Agency that we cannot guarantee a representative will be present when the buses are delivered. The delivery is dependent upon many circumstances such as weather, demonstrations, holidays and a host of other reasons. Accordingly, Gillig proposes and requests approval of the following: Gillig will schedule field service technicians to be on-site soon after the buses start arriving, or as mutually agreeable to the Agency. The technician(s) will continue to be available on-site for as many work days as necessary to get all buses accepted for service. This also applies to pre-set or regularly scheduled service visits during the warranty period. We just want the on-site requirement to be determined by the actual work need, rather than by an arbitrary number of pre-set days, and Gillig requests approval of this modified requirement.
A: The successful proposer will schedule field service technicians to be on-site within ten (10) days after the buses start arriving, or as mutually agreeable to the Agency. The technician(s) will continue to be available on-site for as many work days as necessary to get all buses accepted for service. This also applies to pre-set or regularly scheduled service visits during the warranty period.

Q: Section 3.1.6 – Gillig wishes to advise the Agency that all training programs presented by Gillig instructors are individually tailored to be representative of the vehicle specifications and equipment supplied on the buses at the time of delivery. These programs may also be modified further to meet the needs and/or time constraints of the customer at the preproduction meeting, if Gillig is the successful bidder. Gillig requests approval to provide the training program presented as follows:

1. HVAC – will provide one 8-hour class on the air conditioning system.
2. Wheelchair ramp – will provide one 4-8 hour class on the wheelchair ramp.
3. Luminator will provide one 8-hour class on the destination sign system.
4. Gillig will provide a complete set of Low Floor training DVDs.

A: Training shall include at a minimum classes on basic familiarization, HVAC systems, electrical systems, transmission, diesel engine, CNG engine, hybrid system (engine/transmission/battery, etc.) fuel system, wheelchair ramp, and any other course that may be required by the Agency that deals with the maintenance of the bus. The training shall include at least eight (8) hours of training for the transmission and eight (8) hours of training for the engine.

Q: Section 3.1.6 – Gillig requests the number of personnel who will be attending each phase of the maintenance training programs.
A: The number of personnel will vary by Agency. Up to fifteen (15) staff members will attend each phase of the maintenance training programs for Lextran. Up to ten (10) staff members will attend each phase of the maintenance training programs for WRTA.

Q: Section 3.1.9, 3.18.1, 3.43.5, 3.69 – Gillig wishes to advise the Agency that the Gillig Low Floor bus is fully compliant with all the applicable Federal Motor Vehicle Safety Standards (FMVSS), including FMVSS 302, which is the current industry standard. Your specifications mention in several locations the requirement to comply with Docket 90-A. Please note that this regulation was issued by the Federal Transit Administration on October 20, 1993, and governs "RECOMMENDED Fire Safety Practices for Transit Bus and Van Materials." Over the years Gillig has continued a program with suppliers to provide components that meet or exceed these "voluntary recommended" guidelines. Developing technology, unavailability of suitable materials, product performance, reliability, and costs have precluded some materials being available for manufactures' use. Given the competitive nature of the transit bus industry, some items are very cost prohibitive in our competitive environment, and we wanted to clarify for the record that the Docket 90A requirement listed in the specifications were a voluntary recommended regulation. Gillig requests approval to delete this requirement.
A: Proposers should list all available options that comply with FMVSS.

Q: Section 3.2.6 – Gillig requests approval to provide a departure angle of 8.1 degrees.
A: This request is approved.

Q: Section 3.5.2 – Gillig requests approval to provide the Cummins ISB 280 diesel engine rated at 280 HP and 660 pounds/foot torque. This is the Gillig standard on hybrid buses.
A: This request is approved.

Q: Section 3.5.2 – Gillig requests approval to provide the Allison two-mode split parallel H 40 EP electric drive system to satisfy the requirements of this section.
A: This request is approved.

Q: Section 3.6.1 – Gillig requests approval to delete the requirement of an automatic reverse operation for periodic self-cleaning. Gillig will provide a manual auto reverse switch for self-cleaning on the rear run box. This is standard on our bus.

A: This request is approved.

Q: Section 3.10 – Please advise if the critical service ports for the hydraulic system are required at the steering gear box and hydraulic reservoir.
A: Hydraulic reservoir only is acceptable.

Q: Section 3.13.1 – The requirement to pressure test the CNG fuel system to 125% of system working pressure is questionable. If the tanks were pressurized to 125% (4500 psi) they would need to be recertified for use. Our CNG tank manufacturer does not recommend pressurizing & testing the fuel system to 125% (4500 psi). Gillig has the ability to test up to 4250 psi.
A: This request is approved.

Q: Section 3.13.1 – Gillig requests approval to delete the requirement for the fuel hoses to be less than 48" in length. Gillig will provide MTS with our standard 10 feet of hose, between the high pressure regulator and the low pressure regulator. This length is provided to allow for the fuel to warm up after leaving the pressure regulator and is recommended by our system supplier.
A: This request is approved.

Q: Section 3.13.2 – Gillig requests approval to provide a fuel tank capacity of 127 gallons, with a usable capacity of 120 gallons, internally baffled and manufactured of 3CR12 structural stainless steel. The fuel tank proposed by Gillig complies with all other criteria of the specification. This tank also meets all requirements of the FMVSS regulations.
A: This request is approved.

Q: Section 3.13.3 – Gillig requests approval to provide roof mounted Type 3 Tanks manufactured by SCI (Structural Composite Industries): Type 3 tanks use a seamless 6061 aluminum liner with an exterior carbon composite reinforcing wrapping. These tanks meet: ISO11439, NGV2, FMVSS304, CSA B51 part 2. Mounting Frame Construction are powder coated welded steel construction. All tanks are neck mounted. Tanks are arranged in two rows with the front row consisting (of) four tanks and the rear row consisting of four tanks. All tanks (are) designed for a settled pressure of 3600psi.
A: This request is approved.

Q: Section 3.13.3 – Gillig requests approval to provide eight (8) tanks, four (4) 16" OD x 120" L and four (4) 16" OD x 85" L with a total system capacity of 21,636 SCF @ 3600 psi. This is equivalent to 155 gallons of diesel. This tank configuration on a Gillig low floor bus will exceed the 450 miles between refueling requirement based on our Altoona test cycle.
A: This request is approved.

Q: Section 3.13.3 – Gillig CNG tank fairing developed with and fabricated from Performance Composites and uses a composite core construction technique. Composite core construction uses a layer of honeycomb core sandwiched between two thicknesses of laminated fiberglass. This sandwich construction can be both lighter and stronger than a conventional construction made with only solid fiberglass laminates. The cored fiberglass also has tremendous impact strength to absorb impact. Testing has proven that honeycomb core materials have better memory enabling

them to spring back into shape after a concussion. These sandwiched laminates are structural and create a continuous wall system. Gillig requests approval on our standard roof enclosure.
A: This request is approved.

Q: Section 3.13.3 – The Gillig CNG fuel system uses stainless steel tubing from the tanks to the fuel fill panel. This piping is conductive and is already grounded to the chassis ground. The fueling station should provide a ground path through the fueling nozzle/hose from the fueling station. When the fueling system is connected to the bus, the ground path will be automatically provided by the fueling nozzle. A special ground plug should not be required to ground the fueling system.
A: This request is approved.

Q: Section 3.26.3 – Gillig requests approval to provide urethane bumpers, rather than the Elastomeric bumpers specified. Gillig has utilized these urethane bumpers and found them to be extremely durable in a variety of environments.
A: This request is approved.

Q: Section 3.26.3 – Gillig requests approval to provide our standard front and rear shock absorbers with natural rubber shock bushings. Gillig advises that elastomeric type bushings have been found to not meet the durometer hardness requirements.
A: This request is approved.

Q: Section 3.26.3 – Gillig requests approval to provide a flashing amber light mounted on the exterior of the bus after of the entrance door with audible alarm. The driver will also have an indicator warning light on the dash. Gillig also wishes to advise that the kneeling lamp is approximately (2") in diameter with a 4-second cycle time to facilitate boarding, as specified in this section.
A: This request is approved.

Q: Section 3.28.2 – Gillig requests approval to provide a Douglas steering column with a telescopic adjustment of 1.875". The maximum telescopic range with 0 degree tilt is 30.75 inches and a low-end telescopic adjustment of 28.87". This is standard with the Douglas steering column. Please see attached (below).

Min Telescope Adjustment				Max Telescope Adjustment			
Angle of Slope	Douglas Height		White Book Spec	Angle of Slope	Douglas Height		Spec. Height
0 degrees	28.87"		29.0"	0 degrees	30.75"		34.0"
15 degrees	26.00"		26.2"	15 degrees	27.80"		31.2"
25 degrees	23.68"		24.6"	25 degrees	25.36"		29.6"
35 degrees	21.09"		22.5"	35 degrees	22.64"		27.5"

A: This request is approved.

Q: Section 3.30 – Gillig requests approval to provide a 40-foot Low Floor coach with a maximum turning radius of 44 feet, 7 inches measured over the bumper. This is standard on Gillig low floor buses.
A: This request is approved.

Q: Section 3.36.1 – Gillig requests approval to provide the battery hold-down bracket constructed of a black powder coated metallic material.
A: This request is approved.

Q: Section 3.39.3 – Gillig requests clarification on the I/O Controls mock-up training board specified in this section. Is this item to be required by the agency and price as a separate line item on the price page?
A: Proposers should list I/O Mock-Up Controls as an option and price it as a separate line item.

Q: Section 3.41.3 – Gillig requests approval to provide an enclosed driver storage box with a positive latching door, the size is 2560 cubic in. This is the standard size on Gillig low floor buses.
A: This request is approved.

Q: Section 3.67.6 – Gillig requests approval to provide service area lighting at the engine compartment and the front I/O control panel. This is standard on the Gillig low floor bus.
A: This request is approved.

Q: Section 3.72.4 – Gillig requests clarification on the type of inserts the agency requires.
1. Vandal-resistant padded inserts throughout the bus.
2. Vandal-resistant with non-padded inserts throughout the bus as we provided on the last procurement.

A: Proposers should list multiple seat manufacturers as options and price them as separate line items.
For MATS Specifically, MATS has been successfully deploying vandal-resistant padded seats on the low floor section and vandal-resistant non-padded seats on the rear platform area.

Q: Section 3.74.2 – Gillig requests approval to provide ¼" laminated safety glass for both the entrance and exit doors. This is standard on the Gillig coach.
A: This request is approved.

Q: Section 3.75.3 – Gillig requests approval to provide a fold-out wheelchair ramp 6:1 model LU-18 manufactured by Lift-U and operated by an electric motor located at the entrance door. The ramp dimensions are a nominal thirty one inches (31") wide and the extended length outside the bus is only 48 inches.
A: This request is approved.

Q: Section 3.79.1 – Gillig requests clarification on the location and number of cameras the agency requires with this procurement.
A: The number, location, and manufacturer of the cameras will vary from Agency to Agency. Camera systems will include a minimum of six (6) cameras with locations to be determined at the pre-build meetings. Proposers should list multiple camera manufacturers as options along with additional (adding a camera) pricing. Proposers should price each manufacturer as separate line items.

For Lextran specifically, we shall have the camera system installed at the manufacturer's facility.

Q: Section 3.79.1 – Gillig requests clarification on the video surveillance system described in this section.

1. Is Gillig to provide and install wiring only?
2. Is Gillig to provide and install the complete system?

A: This will vary from agency to agency. Proposers should list pricing for providing the wiring only and for installing the complete system.
For Lextran specifically, we shall have the complete system installed at the manufacturer's facility.
For WRTA specifically, the successful proposer shall provide and install the complete system.
For MATS specifically, MATS utilizes a seven-camera system. It is requested that the proposers quote multiple available surveillance brand systems and camera quantities for agencies to choose from. We would expect the system to be completely installed and operational.

Q: Section 3.81.3 – Gillig requests approval to provide a structural integrity corrosion warranty of seven years/350,000 miles. This meets the current FTA guidelines and is an industry standard.
A: Proposers should provide pricing for twelve years/500,000 miles as an option.

Q: Section 3.81.6 – Gillig requests approval to provide, on coach acceptance, the standard door systems warranty of 12 months/100,000 miles. This is the warranty extended to Gillig by Vapor.
A: This request is approved.

Q: Section 3.81.6 – Gillig requests approval to provide, on coach acceptance, the standard Air Dryer warranty of 12 months/UNL miles. This is the warranty extended to Gillig by SKF/Chicago Rawhide.
A: This request is approved.

Q: Section II Federal Clauses 20. DBE – Gillig is a manufacturer of heavy duty transit vehicles, and comply with the Federal regulations 49 CFR 26 governing the utilization of DBE/WBE material supplier firms. We submit the DBE/WBE information directly to the FTA for their review, utilizing the FTA required reporting documents and schedules. Gillig is an authorized TVM (Transit Vehicle Manufacturer) for 2013. We request confirmation that the requirement to submit additional and separate DBE reports to Lextran for monitoring is not required for this procurement.
A: Lextran confirms that the successful proposer will not need to make separate DBE reports to Lextran. However, the successful proposer must provide their TVM certifications, as is required in the RFP.

Q: Section II Federal Clauses 23. TVM – Gillig certifies that it has complied with the FTA's DBE requirements—please reference our signed TVM Certification submitted prior to the bid as required by your specifications.
A: Lextran acknowledges that Gillig has supplied a signed copy of their TVM Certification with their submitted questions. Other proposers must provide their TVM Certification as part of their

proposal to be considered responsive. Please note that this procurement is a Request for Proposals (RFP) and is not a procurement based on bids.

Q: Section II Federal Clauses 26. Insurance – Gillig maintains and pays the premiums for insurance of the types and limits it deems sufficient for its protection. Lextran will be listed as an additional insured, as required by the specifications. Enclosed is a copy of our Certificate of Liability Insurance for your information and approval.
A: Lextran acknowledges the receipt of Gillig's Certificate of Liability Insurance.

Q: Section II Federal Clauses 27. Indemnification – Gillig requests revision of your current Indemnification wording to the APTA recommended wording as outlined on the attached document. (Not included in this addendum.)
A: Lextran will not make any final decisions regarding this wording at this time. Upon contract award, Lextran will negotiate the wording of this clause, if necessary, with the successful proposer. Proposers may notate in their proposals any issues they have with Lextran's standard terms as outlined in the RFP. However, proposers should note that many of these terms are mandated by the FTA and Lextran's ability to negotiate or change these terms may be limited.

3. OTHER AGENCIES INVOLVED IN THIS JOINT PROCUREMENT

The following Transit Authorities have expressed interest in procuring buses under the terms and conditions of these specifications and this contract. The award of a purchase order or purchasing agreement directly by the following Transit Authorities with the selected vendor for the purchase of buses will be solely up to the Transit Authority based on a number of factors, such as funding, price, vehicle delivery dates, specifications, and the adherence to FTA vehicle procurement regulations.

As stated in the original RFP, Owensboro Transit System in Owensboro, Kentucky and TRANSPO in South Bend, Indiana will also be participating in this procurement.

The Western Reserve Transit Agency (WRTA) in Youngstown, Ohio will also be participating in this joint procurement. They will be purchasing a minimum of zero buses and a maximum of forty-two (42) buses depending upon the availability of funding.

The Lima/Allen County Regional Transit Authority of Lima, Ohio will also be participating in this joint procurement. They will be purchasing a minimum of one (1) bus and a maximum of six (6) buses over the course of the contract depending upon their funding.

The Muskegon Area Transit System (MATS) in Muskegon Heights, Michigan will also be participating in this joint procurement. They will be purchasing a minimum of zero buses and a maximum of five (5) buses depending upon the availability of funding.

4. MINIMUM AND MAXIMUM CLAUSE

For the sake of clarification, the following minimum and maximum quantities of buses will apply to this procurement.

AGENCY	LOCATION	MINIMUM QTY	MAXIMUM QTY
Lextran	Lexington, KY	1	35
TRANSPO	South Bend, IN	0	40
Owensboro Transit System	Owensboro, KY	0	5
Western Reserve Transit Agency (WRTA)	Youngstown, OH	0	42
Lima/Allen County Regional Transit Authority	Lima, OH	1	6
Muskegon Area Transit System	Muskegon Heights, MI	0	5
TOTAL		2	133

The total minimum for this contract is two (2) and the total maximum for this contract is one hundred thirty three (133).

5. ANTICIPATED SCHEDULE FOR PURCHASING BUSES

The RFP included an anticipated schedule for Lextran's bus purchases based on our current budget. That budget has since been revised and so this schedule is no longer accurate. To avoid any potential conflicts, Lextran is not committing to any specific number of bus purchases per year. Lextran is committing to its minimum quantity of one bus over the contract term with a maximum of thirty-five (35) buses over the contract term, based upon the availability of funding.

6. UPDATED LIQUIDATED DAMAGES AMOUNT

Lextran is changing the amount of liquidated damages from the amount in the RFP. The new amount for liquidated damages will be $53.70 per calendar for every day past the promised delivery time of the vehicles.

Exhibit G

RFP # 1302,

issued 2/25/2013

Transit Authority of Lexington-Fayette Urban County Government
109 W. Loudon Avenue
Lexington, Kentucky 40508

REQUEST FOR PROPOSALS

FOR BUSES

RFP # 1302

Date: February 25, 2013

Contact: Keith Srutowski, Purchasing

Telephone Number: 859-255-7756 ext. 408

FAX Number: 859-455-9452

E-mail: ksrutowski@lextran.com

February 25, 2013

RFP # 1302
FOR BUSES

NOTICE OF REQUEST FOR PROPOSALS

The Transit Authority of Lexington-Fayette Urban County Government (Lextran) is issuing this Request for Proposals (RFP) to award a competitive contract to a firm or firms to provide revenue vehicles (buses).

One original and four (4) copies of the proposal package must be submitted no later than 3:00 PM EST on Wednesday, April 17, 2013. Please reference RFP # 1302 on the submittal cover. Proposals received after the time specified may not be considered for award. Proposals received via facsimile (fax) or electronic mail (e-mail) may not be considered. Submitted proposals must be delivered or mailed to LexTran Procurement Department at 109 W. Loudon Avenue, Lexington, KY 40508.

No person or entity submitting a bid in response to this RFP, nor any officer, employee, agent, representative, relative or consultant representing such a person (or entity) may contact through any means or engage in any discussion concerning the award of this contract with any member of the LexTran Board of Directors or any employee of LexTran during the period beginning on the date of bid issue and ending on the date of selection of the Contractor. Any such contact may be grounds for disqualification of the bidder. Contact with LexTran Procurement Department staff during such time period must be limited to site visits and written technical questions.

It is the policy of LexTran to ensure that Disadvantaged Business Enterprises (DBEs), as identified in 49 CFR Part 26, have an equal opportunity to receive and participate in Department of Transportation (DOT)-assisted contracts. LexTran's current aspirational goal proposes that 11.01 percent of all DOT funds expended in DOT-assisted contracts will be awarded to certified DBE firms that are available, willing and able.

For information and questions related to this bid, contact Keith Srutowski at 859-255-7756 ext. 408, via email at ksrutowski@lextran.com, or via facsimile at 859-455-9452. Any questions, requests for clarification or comments concerning this RFP are due from bidders on or before close of business (5:00 PM EST) on Monday, March 18, 2013. Questions, requests for clarification or general inquiries must be submitted in writing to Mr. Srutowski. If required, LexTran's response to these submissions will be in the form of an Addendum.

NO PROPOSAL REPLY FORM

RFP # 1302 FOR BUSES

To assist LexTran in obtaining good competition on its Requests for Proposals, we ask that if you received an invitation but do not wish to propose, please state the reason(s) below and return this form to Keith Srutowski, Procurement Department, Lextran, 109 W. Loudon Avenue, Lexington, KY 40508.

This information will not preclude receipt of future invitations unless you request removal from the Proposer's List by so indicating below.

Unfortunately, we must offer a "No Proposal" at this time because:

____ 1. We do not wish to participate in the proposal process.

____ 2. We do not wish to propose under the terms and conditions of the Request for Proposal document. Our objections are:

_____

_____

____ 3. We do not feel we can be competitive.

_____

_____

____ 4. We do not provide the services on which Proposals are requested.

____ 5. Other: _____

____ We wish to remain on the Proposer's list for these services.

____ We wish to be removed from the Proposer's list for these services.

_____ _____

FIRM NAME SIGNATURE

ANTICIPATED PROPOSAL SCHEDULE

RFP Advertised and Issued ..... Monday, February 25, 2013

Pre-Proposal Conference ..... Thursday, March 14, 2013
1:00 PM EST
Lextran Training Center – Large Conference Room
105 Spruce Street
Lexington, KY 40507

Final Questions and Requests for Clarifications Due to LexTran ..... Monday, March 18, 2013

LexTran Response to Final Questions ..... Monday, March 25, 2013

RFP Closing ..... Wednesday, April 17, 2013 at 3:00 PM

Interviews (if necessary) ..... Thursday, April 24, 2013

Best and Final Offer (if necessary) ..... Monday, April 29, 2013

Contract Award ..... Thursday, May 16, 2013

Section I

SCOPE OF SERVICES

1. INTRODUCTION

The Transit Authority of Lexington-Fayette Urban County Government (LexTran) is Lexington's public transportation system, providing service to residents and visitors of Lexington-Fayette County. The system currently operates service on weekdays, Saturdays and Sundays. LexTran has a fleet of 78 buses and 16 non-revenue cars, trucks and vans. The system's Paratransit service is provided via contract by American Red Cross WHEELS.

2. SCOPE OF SERVICE

Lextran requests proposals for the manufacture and delivery of transit buses in accordance with the terms and conditions set forth in this RFP. The Contract shall be a firm fixed-price Contract.

Included with this RFP is Attachment A, which contains the final specifications that Lextran provided the manufacturer for its most recent bus purchase. This Attachment is provided for informational purposes only to help potential proposers understand the type of vehicles Lextran has used recently. The specifications contained in this RFP are the specifications that must be followed when putting together any response to this RFP. In the case of any potential contradictions between the specifications found in RFP 1302 and Attachment A, the RFP specifications shall take priority.

2.1 Options and Option Pricing

Lextran wishes to procure a quantity of buses for its revenue service. Buses shall be purchased as needed and as funding becomes available throughout the contract period of five (5) years. The initial order is expected to be for six (6) buses. Lextran will purchase as many as thirty-five (35) buses throughout the contract term, depending upon the availability of funding for this project. The current procurement schedule is as follows:

- 6 buses to be delivered in fiscal year 2014 (July 2013 through June 2014)
- 6 buses to be delivered in fiscal year 2015 (July 2014 through June 2015)
- 7 buses to be delivered in fiscal year 2016 (July 2015 through June 2016)
- 7 buses to be delivered in fiscal year 2017 (July 2016 through June 2017)
- 5 buses to be delivered in fiscal year 2018 (July 2017 through June 2018)

However, Lextran makes no guarantee as to the maximum number of vehicles that will be purchased through this procurement. Once a contract has been awarded, the successful proposer will be issued a purchase order as a notice to proceed with the manufacture of any ordered units.

In addition, the Owensboro Transit System (OTS) in Owensboro, Kentucky shall be assigned options to purchase up to five (5) vehicles over the term of the contract. This will potentially include 29 and 35 foot buses.

In addition, the South Bend Public Transportation Corporation (TRANSPO) in South Bend, Indiana shall be assigned options to purchase up to 40 buses over the term of the contract. This will include 35 foot buses.

All Options shall be valid for a period of five (5) years from the effective date of the Contract. There shall be no minimum order quantity for any permissible assignee. Subject to the Agency's right to order modifications, the Option Vehicles shall have the same specifications as the vehicles purchased under this Contract. The Agency may exercise the Options by written notice to the Contractor ("Notice of Exercise of Option") at any time on or before five years following the effective date of the Contract ("Option Date").

The price of the Option Vehicles shall be the unit price of the base order vehicles, ("Base Order Price") adjusted by multiplying the base order price by the following fraction:

Latest Published Preliminary Index Number Prior to Notice of Exercise of Option / Index Number on Effective Date of the Contract

The Index shall be the Producer Price Index for Truck and Bus Bodies, Series No. 1413, published by the United States Department of Labor Bureau of Labor Statistics, or if such Index is no longer in use, then such replacement that is most comparable to the Index as may be designated by the Bureau of Labor Statistics, or as agreed by the parties.

Within thirty (30) days after delivery of the Notice of Exercise of Option to the Contractor, the Contractor shall submit a proposed delivery schedule. Along with the proposed delivery schedule, the Contractor will provide the Agency with access to its production schedule for the purpose of the parties verifying available production capacity. The production schedule shall include a reasonable time for mobilization and for coordinating with other vehicle orders, and it shall be based upon a production rate at least equal to the production rate actually realized with respect to the base order vehicles. If the parties are unable to agree on a production schedule, the maximum term for the production of the Option Vehicles shall not exceed a total of 18 months after the date of Notice to Proceed with Option Vehicle production. The Agency or any permissible assignee may issue a Notice to Proceed at any time after the Contractor submits its proposed delivery schedule. The Contractor shall not commence production of the Option Vehicles prior to issuance of the Notice to Proceed by the Agency or any permissible assignee of the Agency for the Option Vehicles incorporating the agreed production delivery schedule or the 18-month maximum term.

Except as otherwise specifically provided in this Contract, all other terms of the Contract shall apply to the Option Vehicles.

2.2 Assignability of Options

If the Agency does not exercise the option(s) as listed in "Options and Option Pricing," then the Agency reserves the right to assign the option(s) to other grantees of FTA funds in accordance with FTA Circular 4220.1F or its successors.

2.3 Payment Terms

The Agency shall pay and the Contractor shall accept the amounts set forth in the price schedule as full compensation for all costs and expenses of completing the Work in accordance with the Contract, including but not limited to all labor, equipment and material required, overhead, expenses, storage and shipping, risks and obligations, taxes (as applicable), fees and profit, and any unforeseen costs.

All payments shall be made as provided herein, less any additional amount withheld as provided below and less any amounts for liquidated damages in accordance with "Liquidated Damages for Late Delivery of the Bus."

The Agency shall make payments for buses at the unit prices itemized in the price schedule within 30 calendar days after the delivery and acceptance of each bus and receipt of a proper invoice.

The Agency shall make payments for spare parts and/or equipment at the unit prices itemized in the price schedule within 30 calendar days after the delivery and acceptance of said spare parts and/or equipment and receipt of a proper invoice.

The Agency shall make a final payment for all withholding within 30 calendar days of receipt of a final proper invoice and the following:

1. Delivery and acceptance of all Contract deliverables, including manuals and other documentation required by the Contract, excluding training.
2. Contractor provision of any certifications as required by law and/or regulations.
3. Completion of post-delivery audits required under the Contract.

2.3.1 Liquidated Damages for Late Delivery of the Bus

It is mutually understood and agreed by and between the parties to the Contract that time is of the essence with respect to the completion of the Work and that in case of any failure on the part of the Contractor to deliver the buses within the time specified in "Delivery Schedule," except for any excusable delays as provided in "Excusable Delays/Force Majeure" or any extension thereof, the Agency will be damaged thereby. The amount of said damages, being difficult if not impossible of definite ascertainment and proof, it is hereby agreed that the amount of such damages due to the Agency shall be fixed at $100 per calendar day per bus not delivered in substantially as good condition as inspected by the Agency at the time released for shipment.

Prior to delivery, each vehicle shall be completely serviced by the contractor. Service shall include not less than the following: full fuel tank, lubrication, wash, and other checks and adjustments required for proper complete servicing of a new vehicle. Each vehicle shall be ready for placement in service upon delivery and acceptance.

2.4 Condition of Equipment Proposed

This equipment shall be new and unused, of current production model, with the latest design features. The unit shall be delivered fully operational and ready for field use with all necessary maintenance equipment and accessories.

This equipment shall, in all respects, be equipped to operate legally on State highways, night and day, and shall, in all respects, conform to State and Federal regulations pertaining to the equipment herein described. All parts of this vehicle shall conform with the provisions of the State Vehicle Code, Federal Motor Vehicle Safety Standards, Motor Carrier Safety Regulations and requirements under the Americans with Disabilities Act (ADA) Final Guidelines for Transportation Vehicles, 49 CFR, Part 38, Subpart B in effect as of September 6, 1991 or as modified subsequently.

An adequate stock of repair parts and service facilities shall be readily available.

2.4.1 Post-Delivery Tests

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

Buses that fail to pass the post-delivery tests are subject to non-acceptance. The Agency shall record details of all Defects on the appropriate test forms and shall notify the Contractor of acceptance or non-acceptance of each bus according to "Inspection, Testing and Acceptance" after completion of the tests. The Defects detected during these tests shall be repaired according to procedures defined in "Repairs after Non-Acceptance."

2.4.2 Repairs after Non-Acceptance

The Contractor, or its designated representative, shall perform the repairs after non-acceptance. If the Contractor fails or refuses to begin the repairs within five (5) days, then the Work may be done by the Agency's personnel with reimbursement by the Contractor.

2.4.3 Repairs by Contractor

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

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

2.4.4 Repairs by the Agency

The Agency will not take responsibility to correct Defects, except to replace defective parts as instructed by the Contractor.

1. **Parts used.** If the Agency performs the repairs after non-acceptance of the bus, it shall correct or repair the Defect and any Related Defects using Contractor-specified parts available from its own stock or those supplied by the Contractor specifically for this repair. Reports of all repairs covered by this procedure shall be submitted by the Agency to the Contractor for reimbursement or replacement of parts monthly, or at a period to be mutually agreed upon. The Contractor shall provide forms for these reports.
2. **Contractor-supplied parts.** If the Contractor supplies parts for repairs being performed by the Agency after non-acceptance of the bus, these parts shall be shipped prepaid to the Agency.
3. **Return of defective components.** The Contractor may request that parts covered by this provision be returned to the manufacturing plant. The total costs for this action shall be paid by the Contractor.
4. **Reimbursement for labor.** The Agency shall be reimbursed by the Contractor for labor. The amount shall be determined by the Agency for a qualified mechanic at a straight time wage rate of $130 per hour, which includes fringe benefits and overhead adjusted for the Agency's most recently published rate in effect at the time the Work is performed, plus the cost of towing in the bus, if such action was necessary. These wage and fringe benefits rates shall not exceed the rates in effect in the Agency's service garage at the time the Defect correction is made.
5. **Reimbursement for parts.** The Agency shall be reimbursed by the Contractor for defective parts that must be replaced to correct the Defect. The reimbursement shall include taxes where applicable and fifteen (15) percent handling costs.

2.5 Deliveries

2.5.1 Bus Delivery

Delivery of buses shall be determined by signed receipt of the Agency's designated agent(s) at the following point of delivery and may be preceded by a cursory inspection of the bus: 109 West Loudon Avenue, Lexington, Kentucky 40508. Please note that it is likely that Lextran shall relocate at some point during the term of this contract. The new address shall be supplied prior to the placement of any orders to that address. This address shall also be in Lexington, Kentucky.

2.5.2 Delivery Schedule

The buses shall be delivered at a rate not to exceed six (6) buses per week. Delivery shall be completed within 18months of receipt of a purchase order. Hours of delivery shall be between 8:00 AM and 4:00 PM Eastern time Monday through Friday.

2.6 Items to be Provided Upon Delivery

The following items must be furnished by the successful proposer upon delivery of each vehicle:

- All warranty verification vouchers, certificates or coupons
- Operator's manual(s) for vehicle and all add-on equipment (See Section 3 Technical Specifications for specifics)
- Drawings showing wiring of auxiliary circuits, and/or modifications of standard vehicle wiring which would not be included in the standard vehicle maintenance manual
- Completely filled fuel tank(s)
- Complete vehicle maintenance and parts manuals (3 sets for each model year)
- Assurance of compliance with manufacturer's pre-delivery service
- Any maintenance and inspection schedules for the basic vehicle and its subsystems and any add-on equipment
- All required documents, completely executed by the manufacturer/dealer
- Training schedule and all training material
- Two (2) spare tires with rims
- All applicable software
- Additional keys

2.7 Parts Availability Guarantee

The Contractor hereby guarantees to provide, within reasonable periods of time, the spare parts, software and all equipment necessary to maintain and repair the buses supplied under this Contract for a period of at least twelve (12) years after the date of acceptance. Parts shall be interchangeable with the original equipment and shall be manufactured in accordance with the quality assurance provisions of this Contract. Prices shall not exceed the Contractor's then-current published catalog prices.

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

Where the Contractor fails to honor this parts guarantee or parts ordered by the Agency are not received within thirty (30) days of the agreed-upon delivery date, then the Contractor shall provide to Agency, within seven (7) days of the Agency's verbal or written request, the design and manufacturing documentation for those parts manufactured by the Contractor and the original Suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contact persons' names for all of the specific parts not received by the Agency. The Contractor's design and manufacturing documentation provided to the Agency shall be for its sole use in regard to the buses procured under this Contract and for no other purpose.

2.8 Agency-Furnished Property

In the event that equipment or other goods or materials are specified in the Technical Specifications to be furnished by the Agency to the Contractor for incorporation in the Work, the following provisions shall apply:

The Agency shall furnish the equipment, goods or materials in a timely manner so as not to delay Contract delivery or performance dates. If Agency-furnished property is received in a condition not suitable for the intended use, then the Contractor shall promptly notify the Agency, detailing the facts, and at the Agency's expense repair, modify, return or take such other action as directed by the Agency. The parties may conduct a joint inspection of the property before the Contractor takes possession to document its condition.

The Agency retains title to all Agency-furnished property. Upon receipt of the Agency-furnished property, the Contractor assumes the charge and care of the property and bears the risk of loss or damage due to action of the elements or from any other cause. The Contractor shall provide appropriate protection for all such property during the progress of the Work. Should any Agency-furnished equipment or materials be damaged, such property shall be repaired or replaced at the Contractor's expense to the satisfaction of the Agency. No extension of time will be allowed for repair or replacement of such damaged items. Should the Contractor not repair or replace such damaged items, the Agency shall have the right to take corrective measures itself and deduct the cost from any sums owed to the Contractor.

Warranty administration and enforcement for Agency-furnished equipment are the responsibility of the Agency, unless the parties agree to transfer warranty responsibility to the Contractor.

3. TECHNICAL SPECIFICATIONS

Technical specifications define requirements for heavy-duty transit buses, which, by the selection of specifically identified alternative configurations, may be used for both suburban express service and general service on urban arterial streets. Buses shall have a minimum expected life of twelve (12) years or 500,000 miles, whichever comes first, and are intended for the widest possible spectrum of passengers, including children, adults, the elderly and people with disabilities.

Proposers should note that all brand names in the Technical Specifications are meant for informational purposes only and an approved equal is always an acceptable substitute for any brand name mentioned.

3.1 Overall Requirements

The Contractor shall ensure that the application and installation of major bus subcomponents and systems are compliant with all such subcomponent vendors' requirements and recommendations. Contractor and Agency shall identify subcomponent vendors that shall submit installation/application approval documents with the completion of a pilot or lead bus. Components used in the vehicle shall be of heavy-duty design and proven in transit service.

3.1.1 Weight

It shall be a design goal to construct each bus as light in weight as possible without degradation of safety, appearance, comfort, traction or performance.

Buses at a capacity load shall not exceed the tire factor limits, brake test criteria or structural design criteria.

3.1.2 Capacity

The vehicle shall be designed to carry the gross vehicle weight, which shall not exceed the bus GVWR.

3.1.3 Service Life

The minimum useful design life of the bus in transit service shall be at least twelve (12) years or 500,000 miles. It shall be capable op operating at 40,000 miles per year, including the 12^{th} year.

3.1.4 Maintenance and Inspection

Scheduled maintenance tasks shall be related and shall be, in accordance with the manufacturer's recommended preventative maintenance schedule (along with routine daily service performed during the fueling operations).

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

The coach manufacturer shall give prime consideration to the routine problems of maintaining the vehicle. All coach components and systems, both mechanical and electrical, which will require periodic physical Work or inspection processes shall be installed so that a minimum of time is consumed in gaining access to the critical repair areas. It shall not be necessary to disassemble portions of the coach structure and/or equipment such as seats and flooring under seats in order to gain access to these areas. Each coach shall be designed to facilitate the disassembly, reassembly, servicing or maintenance, using tools and equipment that are normally available as standard commercial items.

Requirements for the use of unique specialized tools will be minimized. The body and structure of the coach shall be designed for ease of maintenance and repair. Individual panels or other equipment which may be damaged in normal service shall be repairable or replaceable. Ease of repair shall be related to the vulnerability of the item to damage in service.

Contractor shall provide a list of all special tools and pricing required for maintaining this equipment. Said list shall be submitted as a supplement to the Pricing Schedule.

NOTE: Tools such as compartment door keys, bellows gauges and other tools that are required for daily maintenance and inspections shall not be included in the special tool list and shall be furnished for each coach.

3.1.5 Interchangeability

Unless otherwise agreed, all units and components procured under this Contract, whether provided by Suppliers or manufactured by the Contractor, shall be duplicates in design, manufacture and installation to ensure interchangeability among buses in each order group in this procurement. This interchangeability shall extend to the individual components as well as to their locations in the buses. These components shall include, but are not limited to, passenger window hardware, interior trim, lamps, lamp lenses and seat assemblies. Components with non-identical functions shall not be, or appear to be, interchangeable.

Any one component or unit used in the construction of these buses shall be an exact duplicate in design, manufacture and assembly for each bus in each order group in this Contract. Contractor shall identify and secure approval for any changes in components or unit construction provided within a Contract.

In the event that the Contractor is unable to comply with the interchangeability requirement, the Contractor must notify the Agency and obtain the Agency's prior written approval, including any changing in pricing.

Agency shall review proposed product changes on a case-by-case basis and shall have the right to require extended warranties to ensure that product changes perform as least as well as the originally supplied products.

3.1.6 Training

The Contractor shall have at least one qualified instructor who shall be available at the Agency's property for five (5) calendar days between the hours of 7:00 AM and 5:00 PM per month for zero (0) months prior to, and three (3) months after, acceptance of the first bus. Instructor(s) shall conduct schools and advise the personnel of the Agency on the proper operation and maintenance of the equipment. The Contractor also shall provide visual and other teaching aids (such as manuals, slide presentations and literature) for use by the Agency's own training staff and which become the property of the Agency.

Technical/Service Representatives
The Contractor shall, at its own expense, have one or more competent technical service representatives available on request to assist the Agency in the solution of engineering or design problems within the scope of the specifications that may arise during the warranty period. This does not relieve the Contractor of responsibilities under the provisions of "Section 7: Warranty Requirements."

3.1.7 Operating Environment

The bus shall achieve normal operation in ambient temperature ranges of 10 °F to 115 °F, at relative humidity between 5 percent and 100 percent, and at altitudes up to 3000 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 3000 feet. Altitude requirements above 3000 feet will need separate discussions with the engine manufacturer to ensure that performance requirements are not compromised. Speed, gradability and acceleration performance requirements shall be met at, or corrected to, 77 °F, 29.31 in. Hg, dry air per SAE J1995.

3.1.8 Noise

Interior Noise
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 bus shall have a sound level of 65 dBA or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

The bus-generated noise level experienced by a passenger at any seat location in the bus shall not exceed 80 dBA. The driver area shall not experience a noise level of more than 75 dBA.

An exception shall be made for the turntable area, which shall be considered a separate environment.

Exterior Noise
Airborne noise generated by the bus and measured from either side shall not exceed 80 dBA under full power acceleration when operated 0 to 35 mph at curb weight. The maximum noise level generated by the bus pulling away from a stop at full power shall not exceed 83 dBA. The bus-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. The Contractor shall comply with the exterior noise requirements defined in local laws and ordinances identified by the Agency and SAE J366.

3.1.9 Fire Safety

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

All materials used in the construction of the passenger compartment of the bus shall be in accordance with the Recommended Fire Safety Practices defined in FMVSS 302, dated October 20, 1993. Materials entirely enclosed from the passenger compartment, such as insulation within the sidewalls and sub-floor, need not comply. In addition, smaller components and items, such as seat grab rails, switch knobs and small light lenses, shall be exempt from this requirement.

3.1.10 Respect for the Environment

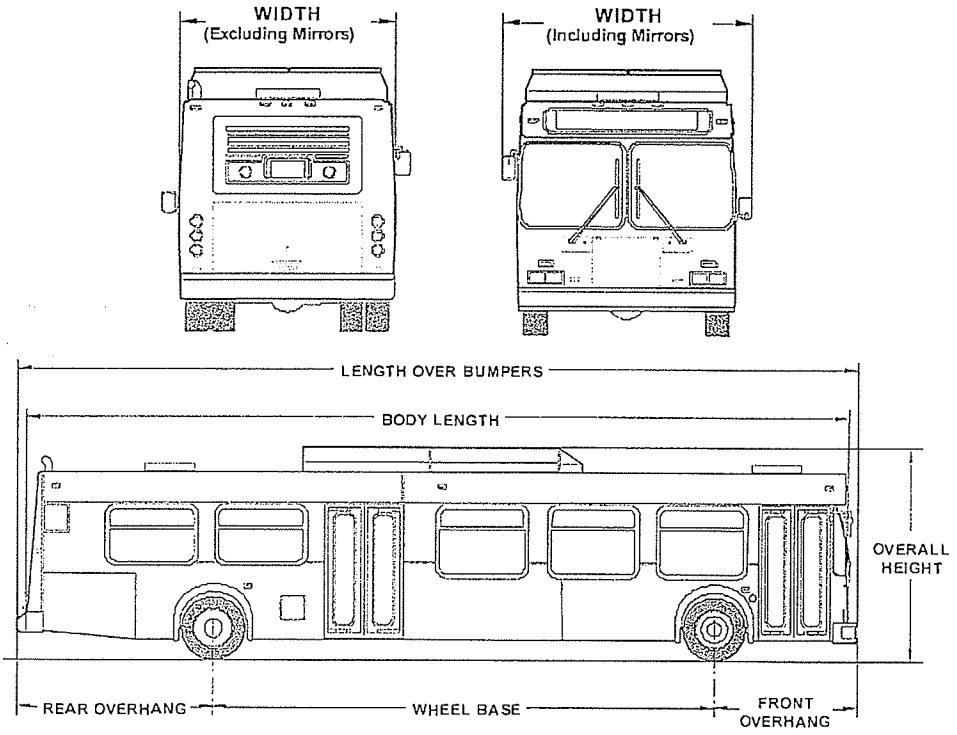
In the design and manufacture of the bus, the Contractor shall make every effort to reduce the amount of potentially hazardous waste. In accordance with Section 6002 of the Resource

Conservation and Recovery Act, the Contractor shall use, whenever possible and allowed by the specifications, recycled materials in the manufacture of the bus.

3.2 Physical Size

With exceptions such as exterior mirrors, marker and signal lights, bumpers, fender skirts, washers, wipers, ad frames, cameras, object detection systems, bicycle racks, feelers and rub rails, the bus shall have the following overall dimensions as shown in Figure 1 at static conditions and design height.

FIGURE 1
Transit Bus Exterior Dimensions



3.2.1 Bus Length

For ease of use, the following tolerances will be allowable for each given bus length. Bus length is determined as the measurement from bumper to bumper.

- **30-ft bus:** 29 ft, 11 in. to 34 ft, 11 in.
- **35-ft bus:** 35 ft to 39 ft, 11 in.
- **40-ft bus:** 40 ft to 44 ft, 11 in.
- **45-ft bus:** 45 to 47 ft
- **60-foot (articulated):** 59 to 65 ft

3.2.2 Bus Width

102-in. Width Bus
Body width shall be 102 inches (+0, -1 inc.).

3.2.3 Bus Height

Maximum Overall Height
Maximum overall height shall be 140 inches, including all rigid, roof-mounted items such as A/C, exhaust, fuel system and cover, etc.

3.2.4 Step Height

The step height shall not exceed 16.5 inches at either doorway without kneeling and shall not exceed 15.5 inches at the step. A maximum of two steps is allowed to accommodate a raised aisle floor in the rear of the bus.

3.2.5 Underbody Clearance

The bus shall maintain the minimum clearance dimensions as shown in Figure 2 and defined in SAE Standard J689, regardless of load up to the gross vehicle weight rating.

3.2.6 Ramp Clearances

The approach angle is the angle measured between a line tangent to the front tire static loaded radius arc and the initial point of structural interference forward of the front tire to the ground.

The departure angle is the angle measured between a line tangent to the rear tire static loaded radius arc and the initial point of structural interference rearward of the rear tire to the ground.

The breakover angle is the angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle that defines the largest ramp over which the vehicle can roll.

TABLE 1
Breakover Angle

Angle	30- to 45-ft Bus	60-ft Bus
Approach	8.6 degrees (min.)	9 degrees (min.)
Front breakover	8 degrees (min.)	10.2 degrees (min.)
Rear breakover (articulated only)	n/a	8.7 degrees (min.)
Departure	8.7 degrees (min.)	9 degrees (min.)

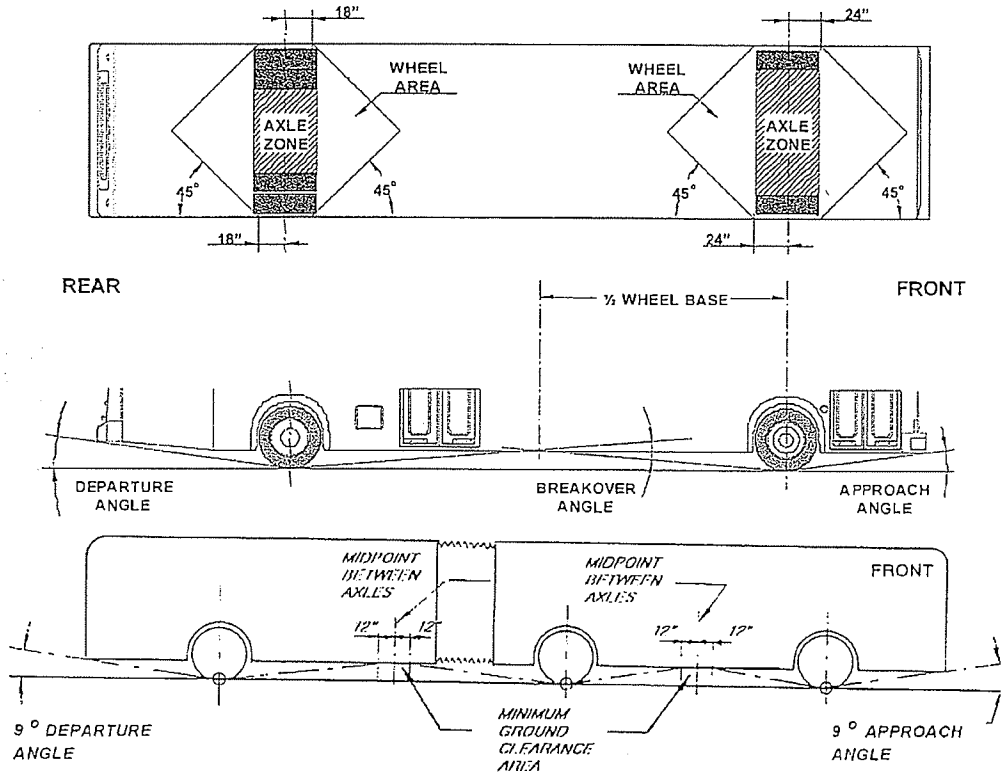
3.2.7 Ground Clearance

Ground clearance shall be no less than 9 in., (8 in. at jacking pad) except within the axle zone and wheel area.

Axle zone clearance, which is the projected area between tires and wheels on the same axial centerline, shall be no less than 5.4 in.

Wheel area clearance shall be no less than 8 in. for parts fixed to the bus body and 6 in. for parts that move vertically with the axles.

FIGURE 2
Transit Bus Minimum Road Clearance



3.2.8 Floor Height

Height of the step above the street shall be no more than 16 in. 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 not exceed 3.5 degrees off the horizontal except locally at the doors where 2 degree 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 installed tires. A maximum of two steps is allowed to accommodate a raised aisle floor in the rear of the bus.

3.2.9 Interior Headroom

Headroom above the aisle and at the centerline of the aisle seats shall be no less than 78 in. in the forward half of the bus tapering to no less than 74 in. forward of the rear settee. At the centerline of the window seats, headroom shall be no lower than 65 in., except for parcel racks and reading lights, if specified. Headroom at the back of the rear bench seat may be reduced to a minimum of 56 in., but it shall increase to the ceiling height at the front of the seat cushion. In any area of the bus directly over the head of a seated passenger and positioned where a passenger entering or leaving the seat is prone to strike his or her head, padding shall be provided on the overhead paneling.

3.2.10 Aisle Width

The minimum clear aisle width between pairs of transverse seats with all attached hardware shall be at least 22 in.

The aisle width between the front wheelhouses shall be at least 35.5 in., and the entire area between the front wheelhouses shall be available for passengers and mobility aid devices.

3.3 Power Requirements

The propulsion system shall be sized to provide sufficient power to enable the bus to meet the defined acceleration, top speed, and gradability requirements, and operate all propulsion-driven accessories using actual road test results and computerized vehicle performance data.

3.3.1 Top Speed

The bus shall be capable of achieving a top speed of 65 mph on a straight, level road at GVWR with all accessories operating. The bus shall be capable of safely maintaining the vehicle speed according to the recommendations by the tire manufacturer.

NOTE: Values are assumed to be sustained. Manufacturer shall supply Agency with data if there is a variance between peak performance and sustained vehicle performance.

3.3.2 Gradability

Gradability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating.

The propulsion system and drivetrain shall enable the bus to achieve and maintain a speed of 40 mph on a 2½ percent ascending grade and 15 mph on a 10 percent ascending grade continuous.

NOTE: Values are assumed to be sustained. Manufacturer shall supply Agency with data if there is a variance between peak performance and sustained vehicle performance.

3.3.3 Acceleration

The acceleration shall meet the requirements below and shall be sufficiently gradual and smooth to prevent throwing standing passengers off-balance. Acceleration measurement shall commence when the accelerator is depressed.

TABLE 2
Maximum Start Acceleration Times on a Level Surface[1]

Speed (mph)	Maximum time (seconds)
10	5
20	10
30	18
40	30
50	60
Top speed	

1. Vehicle weight = GVWR

Hybrid
The propulsion and braking systems shall meet the performance requirements of the Duty Cycle.

Braking application and performance shall remain consistent regardless of hybrid system State of Charge (SOC) or other variances related to regenerative braking.

The system shall be programmable to allow optimization of acceleration and deceleration rate. Performance may be affected when reprogramming. The manufacturer shall supply the new performance data.

3.3.4 Operating Range

The operating range of the coach shall be designed to meet the operating profile as stated in the "Design Operating Profile" section.

3.3.4.1 Diesel

The operating range of the coach when run on the Altoona Test cycle shall be at least 400 mi (560 km) or 20 hours with full fuel capacity.

3.3.4.2 CNG

The operating range of the coach when run on the Altoona Test cycle shall be at least 400 mi or 20 hrs with an initial gas settled pressure 0f 3600 psi at 70°F.

3.3.4.3 Hybrid

The operating range of the coach when run on the design operating profile "Design Operating Profile" shall be at least 350 mi on a full tank of fuel.

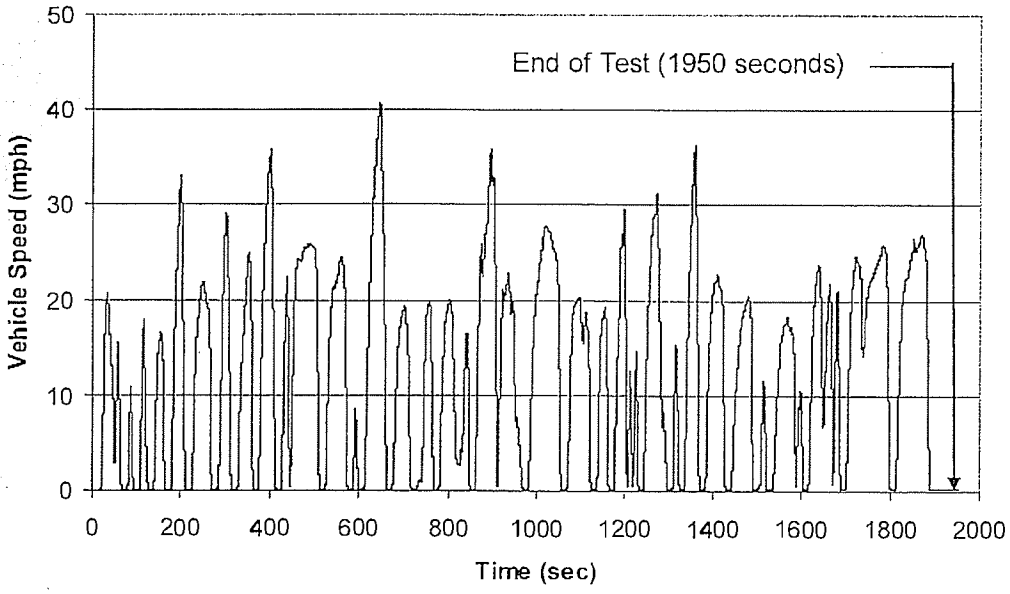
3.4 Fuel Economy (Design Operating Profile)

Test results from the Altoona fuel economy tests or other applicable test procedures shall be provided to the Agency. Results shall include vehicle configuration and test environment information. Fuel economy data shall be provided for each design operating profile. The design operating profile is assumed to be defined by the Altoona fuel duty cycle.

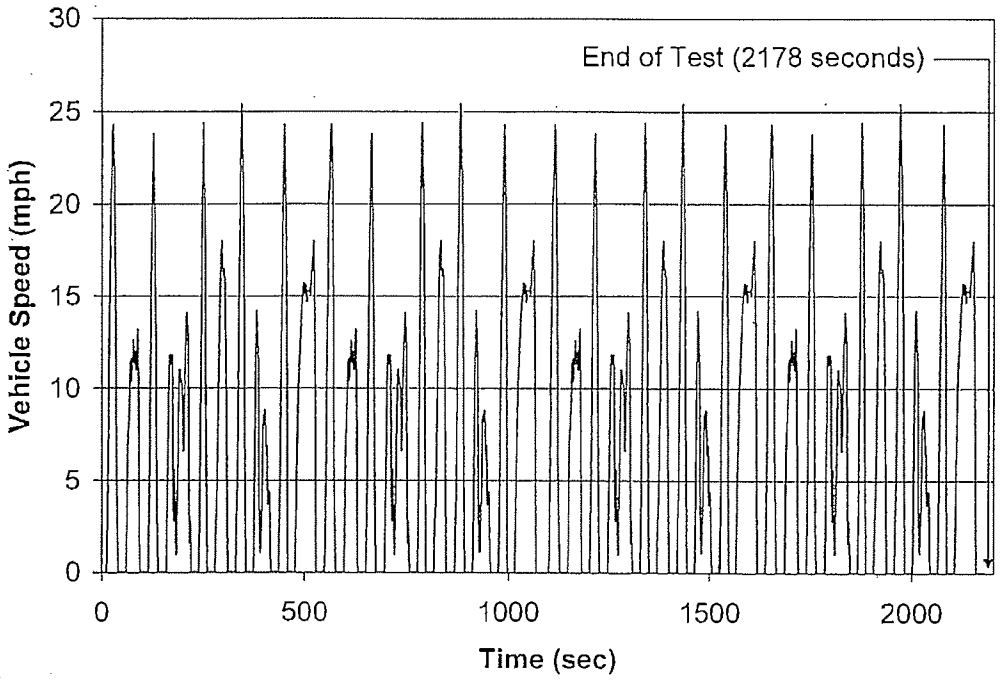
Fuel economy tests shall be run on these four duty cycles.

Duty Cycles (avg speed)
Manhattan: 6.8 mph
Orange County: 12.7 mph
UDDS: 19 mph
Idle time

Procuring Agency will provide a percentage of each duty cycle that is representative of agency's service.



Orange County Bus Cycle



Double Manhattan Bus Cycle

3.4.1 Hybrid

Energy storage system state of charge correction methods stated in SAE J2711 shall be utilized.

3.5 Engine

The engine shall comply with applicable local, state, and/or federal emissions and useful life requirements. Components of the fuel management and/or control system shall have a design life of not less than 150,000 miles without replacement or major service. The lifetime estimate is based on the design operating profile.

The engine shall be equipped with an electronically controlled management system, compatible with either 12- or 24-volt power distribution. The engine control system shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. The engine's electronic management system shall monitor operating conditions and provide instantaneous adjustments to optimize both engine and bus performance. The system shall be programmable to allow optimization of programmable features.

The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running. Special equipment or procedures may be employed to start the bus when exposed to temperatures less than 30 °F for a minimum of four hours without the engine in operation. All cold weather starting aids, engine heating devices and procedures shall be of the type recommended by the engine manufacturer and approved by the Agency. The integration of all systems on the vehicle relative to engine idle speed shall be the responsibility of the vehicle manufacturer to meet the requirements of the transit property.

The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically derate power and/or speed and initiate engine shutdown as needed.

Automatic Engine Protection/Shutdown Override Feature
A control shall be available to the operator/driver that when constantly depressed and released will delay the engine shutdown or allow the bus to be moved. Override action shall be recorded. This data shall be retrievable by the Agency.

3.5.1 Engine (CNG)

The engine shall meet all regulatory requirements when operating on fuel equal to CARB Specifications for Compressed Natural Gas #2292.5. The four predominant characteristics that must be met are Methane, Ethane, Butane, and Propane.

3.5.2 Propulsion System (Hybrid)

Propulsion System Description
The bus shall be powered by a hybrid propulsion system. Function and operation of the bus shall be transparent to the Bus Operator and passengers. The OEM shall assure that the bus structure can successfully accept the installation of the propulsion system and be operated on the stated duty-cycle for a period of 12 years without a structural failure. At a minimum, propulsion system shall comply with applicable local, state, and/or federal emissions and useful life requirements. The propulsion system shall comply with local, state, and federal (maintenance) and other applicable sections.

The Hybrid Drive System shall be rated for the GVWR or greater of the bus.

Propulsion System Service
The propulsion system 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 propulsion system or any subsystems. However, the Agency shall recognize that properly rated test equipment and safe electrical work practices are essential when servicing high voltage hybrid components. The exhaust system, air cleaner, air compressor, starter (if used), alternator, radiator, all engine accessories, and any other component requiring service or replacement shall be easily removable. Contractor shall provide all specialty tools and diagnostic equipment required for maintaining the Propulsion System in accordance with Special Tools List.

Primary Propulsion Unit and Traction Motor
The PPU and traction motor may be configured in a variety of methods dependent upon type of drive, series and/or parallel. The definition of motor in the context of this specification assumes the device can provide or consume energy as well as provide or retard mechanical motion.

Energy Storage and Controller
Design and performance shall be provided to the Agency. Energy storage shall be of a commercial design capable of operating in the Agency transit environment. The primary charging of the energy storage system shall be accomplished by the on-board PPU and regenerative braking.

Thermal management will be provided to ensure optimal life and performance of the ESS over the environmental operating range.

Hybrid System Controller (HSC)
The HSC regulates energy flow throughout hybrid system components in order to provide motive performance and accessory loads, as applicable, while maintaining critical system parameters (e.g., voltages, currents, temperatures, etc.) within specified operating ranges.

The controller shall monitor and process inputs and execute outputs as appropriate to control the operation of all propulsion system components.

Prime Power Unit (PPU)
The PPU and related emission systems shall meet all applicable emissions and design/durability guidelines and standards.

Contractor shall provide Agency with expected durability of the PPU and related emission systems.

NOTE: Agency will provide desired fuel type.

Supplier shall recommend powerplant.

The PPU shall be equipped with an electronically controlled management system, compatible with multiplex wiring systems and either 12- or 24-volt electrical systems.

The engine shall have on-board diagnostic capabilities, able to monitor vital functions, store out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in operator's area and near or inside engine compartment. The on-board diagnostic system shall inform the operator via visual and/or audible alarms when out-of-parameter conditions exist for vital engine functions.

The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running. Special equipment or procedures may be employed to start the engine when exposed to temperatures less than 30° F for a minimum of four hours without the engine in

operation. All cold weather starting aids, engine heating devices and procedures shall be of the type recommended by the engine manufacturer and approved by the Agency.

Standard Requirements for a Fast Idle Device
The engine shall be equipped with an operator-controlled fast idle device. The fast idle control shall be a two-way switch mounted on the dash or side console and shall activate only with the transmission in neutral and the parking brake applied.

3.6 Cooling Systems

The cooling systems shall be of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufacturers' cooling system requirements. The cooling system fan controls should sense the temperatures of the operating fluids and the intake air, and if either is above safe operating conditions the cooling fan should be engaged. The fan control system shall be designed with a fail-safe mode of "fan on." The cooling system shall meet the requirements stated in the operating environment.

3.6.1 Engine Cooling

A means of determining satisfactory engine coolant level shall be provided. A spring-loaded, push-button type valve or lever shall be provided to safely release pressure or vacuum in the cooling system with both it and the water filler no more than +/- 60 in. above the ground. Both shall be accessible through the same access door.

The radiator and charge air cooler shall be of durable, corrosion-resistant construction with non-removable tanks.

Screen in Front of Radiator
The radiator input shall be protected by an easily cleanable screen designed to collect large debris. Radiators with a fin density greater than 12 fins per in. or a louvered slit design shall not be used. No heat-producing components or climate control system components shall be mounted between the engine cooling air intake aperture and the radiator. The radiator and charge air cooler shall be designed to withstand thermal fatigue and vibration associated with the installed configuration. The radiator and charge air cooler cores shall be easily cleaned (to include engine side core surface) with standard pressure-washing equipment.

Coolant Filtration without Supplemental Additives
The engine cooling system shall be equipped with a properly sized water filter with a spin-on element. The filter shall not release or contain supplemental coolant additives.

Self-Cleaning
Radiator and charge air cooler fan(s) shall be electrically driven and capable of automated reverse operations for periodic self-cleaning of the radiator and charge air cooler.

Higher Mounting Design

The lower edge of the radiator and charge air cooler core(s) shall be mounted at a height no less than 3 ft above street level to minimize core fouling caused by dirt, debris, leaves, etc.

Cooling Fan Controls
The cooling fan shall be temperature controlled, allowing the engine to reach operating temperature quickly.

3.6.2 Charge Air Cooling

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

3.6.3 Transmission Cooling

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

3.6.4 Hybrid Drive System Cooling

Thermal management system shall maintain hybrid system components within design operating temperature limits.

3.7 Transmission (Conventional Powertrain)

The transmission shall be multiple speed, automatic shift with torque converter, retarder and electronic controls. Gross input power, gross input torque and rated input speed shall be compatible with the engine. The transmission shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major service. The transmission should be easily removable without disturbing the engine and accessible for service.

The electronic controls shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. Electronic controls shall be compatible with either 12- or 24-volt power distribution, provide consistent shift quality and compensate for changing conditions such as variations in vehicle weight and engine power.

A nominal brake pedal application of 6 to 10 psi shall be required by the driver to engage forward or reverse range from the neutral position to prevent sudden acceleration of the bus from a parked position.

The electronically controlled transmission shall have on-board diagnostic capabilities, be able to monitor functions, store and time stamp out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. The transmission shall contain built-in protection software to guard against severe damage. The on-board diagnostic system shall trigger a visual alarm to the driver when the electronic control unit detects a malfunction.

An electronic transmission fluid level monitoring and protection system shall be provided.

A brake pedal application of 6 to 10 psi shall be required by the driver to engage forward or reverse range from the neutral position to prevent sudden acceleration of the bus from a parked position.

Automatic Neutral Function with Automatic Re-engagement
The transmission, when in forward direction, shall automatically shift the transmission to neutral when the vehicle registers zero road speed, engine is idle and service brakes are applied. If the status of any one or more of the three signals changes, the transmission immediately and automatically resumes forward mode operation.

3.8 Retarder

The powertrain shall be equipped with a retarder designed to extend brake lining service life. The application of the retarder shall cause a smooth blending of both retarder and service brake function and shall not activate the brake lights.

Actuation of ABS and/or automatic traction control (ATC) shall override the operation of the brake retarder.

Throttle Pedal Activation of the Retarder
The retarder shall become partially engaged (approximately one-third of its total application, with a resulting deceleration of no greater than 0.077g) when the throttle pedal is completely released. Maximum retarder shall be achieved when brake pedal is depressed prior to engagement of service brakes, with a maximum resulting deceleration of approximately 0.20g in an empty bus. The resulting decelerations specified include the effects of engine braking, wind resistance and rolling resistance.

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

Retarder Disable Switch Not Accessible
The retarder disable switch is not required to be accessible to the seated driver.

3.9 Mounting

All powerplant mounting shall be mechanically isolated to minimize transfer of vibration to the body structure and provide a minimum clearance of 0.75 in. Mounts shall control the movement of the powerplant so as not to affect performance of belt-driven accessories or cause strain in piping and wiring connections to the powerplant.

3.9.1 Service

The propulsion system shall be arranged for ease of access and maintenance. The Contractor shall list all special tools, fixtures or facility requirements recommended for servicing. The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal. An engine oil pressure gauge and coolant temperature gauge shall be provided in the engine compartment. These gauges shall be easily read during service and mounted in an area where they shall not be damaged during minor or major repairs.

Engine oil and the radiator filler caps shall be hinged to the filler neck and closed with spring pressure or positive locks to prevent leakage. All fluid fill locations shall be properly labeled to help ensure that correct fluid is added. All fillers shall be easily accessible with standard funnels, pour spouts and automatic dispensing equipment. All lubricant sumps shall be fitted with magnetic-type drain plugs.

No engine bypass oil filter.

Engine Oil Pressure and Coolant Temperature Gauges
Engine oil pressure and coolant temperature gauges required in engine compartment.

Engine Air Cleaner
An air cleaner with a dry filter element and a graduated air filter restriction indicator shall be provided. The location of the air intake system shall be designed to minimize the entry of dust and debris and to maximize the life of the air filter. The engine air duct shall be designed to minimize the entry of water into the air intake system. Drainage provisions shall be included to allow any water/moisture to drain prior to entry into air filter.

3.10 Hydraulic Systems

Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major coach systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. Critical points in the hydraulic system shall be fitted with service ports so that portable diagnostic equipment may be connected or sensors for an off-board diagnostic system permanently attached to monitor system operation when applicable. A tamper-proof priority system shall prevent the loss of power steering during operation of the bus if other devices are also powered by the hydraulic system.

The hydraulic system shall operate within the allowable temperature range as specified by the lubricant manufacturer.

Hydraulic System Sensors
Sensors in the main hydraulic system, excluding those in the power steering system, shall indicate on the driver's on-board diagnostic panel conditions of low hydraulic fluid level.

3.10.1 Fluid Lines

All lines shall be rigidly supported to prevent chafing damage, Fatigue Failures, degradation and tension strain. Lines should be sufficiently flexible to minimize mechanical loads on the components. Lines passing through a panel, frame or bulkhead shall be protected by grommets (or similar devices) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing and wear. Pipes and fluid hoses shall not be bundled with or used to support electrical wire harnesses.

Lines shall be as short as practicable and shall be routed or shielded so that failure of a line shall not allow the contents to spray or drain onto any component operable above the auto-ignition temperature of the fluid.

All hoses, pipes, lines and fittings shall be specified and installed per the manufacturer's recommendations.

3.10.2 Fittings and Clamps

All clamps shall maintain a constant tension at all times, expanding and contracting with the line in response to temperature changes and aging of the line material. The lines shall be designed for use in the environment where they are installed. For example, high-temperature resistant in the engine compartment, resistant to road salts near the road surface, and so on.

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

3.10.3 Charge Air Piping

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

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

3.11 Radiator

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

3.12 Oil and Hydraulic Lines

Oil and hydraulic lines shall be compatible with the substances they carry. The lines shall be designed and intended for use in the environment where they are installed. For example, high–temperature resistant in the engine compartment, resistant to road salts near the road surface, and so on. Lines within the engine compartment shall be composed of steel tubing where practicable, except in locations where flexible lines are required.

Hydraulic lines of the same size and with the same fittings as those on other piping systems of the bus, but not interchangeable, shall be tagged or marked for use on the hydraulic system only.

3.13 Fuel

3.13.1 Fuel Lines

Fuel lines shall be securely mounted, braced and supported as designed by the bus manufacturer to minimize vibration and chafing and shall be protected against damage, corrosion or breakage due to strain or wear.

Manifolds connecting fuel containers shall be designed and fabricated to minimize vibration and shall be installed in protected locations to prevent line or manifold damage from unsecured objects or road debris.

Fuel hose and hose connections, where permitted, shall be made from materials resistant to corrosion and fuel and protected from fretting and high heat. Fuel hoses shall be accessible for ease of serviceability.

Fuel choice will be hybrid and diesel options. Lextran uses a Posi-Lock system for fueling.

Fuel Lines, Diesel
Fuel lines shall be capable of carrying the type of fuel specified by the Agency (i.e., up to B20 type fuel).

Fuel Lines, CNG
Fuel lines shall comply with NFPA-52. All tubing shall be a minimum of seamless Type 304 stainless steel (ASTM A269 or equivalent). Fuel lines and fittings shall not be fabricated from cast iron, galvanized pipe, aluminum, plastic, or copper alloy with content exceeding 70 percent copper. Pipe fittings and hoses shall be clear and free from cuttings, burrs or scale. Pipe thread joining material that is impervious to CNG shall be utilized as required. Fuel lines shall be identifiable as fuel lines only.

High-pressure CNG lines shall be pressure tested to a minimum of 125 percent of system working pressure prior to fueling. CNG, nitrogen or clean, dry air shall be used to pressure test the lines/assembly. The bus manufacturer shall have a documented procedure for testing the high pressure line assembly.

Fuel lines shall be securely mounted, braced and supported using "split-block" type or stainless steel P clamps; all mounting clamps shall be mounted to a rigid structure to minimize vibration and shall be protected against damage, corrosion or breakage due to strain, rubbing, or wear. "Floating clamps" (not mounted to a rigid structure) shall not be permitted. Fuel lines shall not be used to secure other components (wires, air lines, etc).

Manifolds connecting fuel containers shall be designed and fabricated to minimize vibration and shall be installed in protected location(s) to prevent line or manifold damage from unsecured objects or road debris.

Fuel hose connections, where permitted, shall be less than 48 in. in length, made from materials resistant to corrosion and action of natural gas, and protected from fretting and high heat and shall be supported approximately every 12 in.

3.13.2 Design and Construction, Diesel

Fuel Tank(s)
The fuel tank(s) shall be made of corrosion resistant stainless steel. The fuel tank shall be made of sufficiently heavy gauge 300 series or ASTM Spec. A240 stainless steel.

Installation
The fuel tank(s) shall be securely mounted to the bus to prevent movement during bus maneuvers.

The fuel tank(s) shall be equipped with an external, hex head, drain plug. It shall be at least a ⅜-inch size and shall be located at the lowest point of the tank(s). The fuel tank(s) shall have an inspection plate or easily removable filler neck to permit cleaning and inspection of the tank(s) without removal from the bus. The tank(s) shall be baffled internally to prevent fuel-sloshing noise regardless of fill level. The baffles or fuel pickup location shall assure continuous full power operation on a 6 percent upgrade for 15 minutes starting with no more than 25 gallons of fuel over the unusable amount in the tank(s). The bus shall operate at idle on a 6 percent

downgrade for 30 minutes starting with no more than 10 gallons of fuel over the unusable amount in the tank(s).

The materials used in mounting shall withstand the adverse effects of road salts, fuel oils, and accumulation of ice and snow for the life of the bus.

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

Fuel Filler
The fuel filler shall be located 7 to 32 feet behind the centerline of the front door on the curbside of the bus. The filler cap shall be retained to prevent loss and shall be recessed into the body so that spilled fuel will not run onto the outside surface of the bus.

The fuel lines forward of the engine bulkhead shall be in conformance to SAE Standards.

Dry-break fuel filler
The fuel filler shall accommodate a nozzle that forms a locked and sealed connection during the refueling process to eliminate spills. Fuel shall not be allowed to flow into the tank unless the nozzle has been properly coupled, locked and sealed to the filler. With the nozzle open, fuel shall enter the tank at a fill rate of not less than 40 gallons per minute of foam-free fuel without causing the nozzle to shut off before the tank is full. The nozzle shall automatically shut off when the tank is essentially full. Once disconnected, fuel shall not be allowed to flow through the nozzle at any time. Any pressure over 3 psi shall be relieved from the fuel tank automatically. An audible signal shall indicate when the tank is essentially full. The dry break system shall be compatible with the Agency's system. The fuel filler cap shall be hinged. Please note that Lextran currently uses the Posi-Lock system.

The fuel filler cap shall be hinged.

3.13.3 Design and Construction, CNG

Fuel Containers/Cylinders
CNG fuel containers/cylinders must be designed, constructed, manufactured, and tested in accordance with at least one of the following:

U.S. Applications:
- NFPA 52-Standard for Compressed Natural Gas (CNG) Vehicular Fuel Systems
- FMVSS 304
- Any local standard(s) specifically intended for CNG fuel containers

The design and construction of the fuel system supplied by the OEM shall comply with federal and local regulations.

Installation
Fuel cylinders shall be installed in accordance with ANSI/IAS NGV2 - 1998, Basic Requirements for Compressed Natural Gas Vehicles (NGV) Fuel Containers and NFPA 52, Compressed Natural Gas (CNG) Vehicular Fuel Systems Code, 1998 edition Section 303. In the case of a low floor transit bus, the placement of tanks shall be limited to the roof of the vehicle or in the compartment above the engine of the vehicle.

Fuel cylinders, attached valves, pressure relief devices, and mounting brackets should be installed and protected so that their operation is not affected by bus washers and environmental agents such as rain, snow, ice or mud. These components should be protected from significant damage caused by road debris or collision.

The roof and above the engine mounted tanks shall be contained within a skeletal structure resembling a roll cage and contained within an enclosure. The enclosure shall incorporate a hinged clamshell type access. The access panels shall be designed to offer protection from weather and to be sacrificial as a means of providing an escape path to atmosphere upon rapid enclosure pressure rise. The latching method shall utilize quick release captive hardware that can be demonstrated to last the life of the bus. Additional shielding shall be provided surrounding end fittings and valves as needed. Shields shall be attached to the bus structure hinged in a manner that permits one mechanic to unlatch and swing the shield open for routine inspections. As practical, electrical components shall not be located within the roof enclosure and if unavoidable, they shall be intrinsically safe.

CNG fueled buses shall be equipped with an active automatic gas detection system which shall annunciate unsafe levels of methane. The automatic gas detection system shall be integrated with an onboard fire suppression system.

The access panels shall also be interlocked via proximity sensors, such that, if other than in their fully closed/locked position, an interlock will prevent engine starter engagement, prevent selection of forward or reverse transmission and shall apply the brake interlock at speeds less than 3 mph.

Labeling
CNG fuel systems shall be labeled in accordance with NFPA 52, "Compressed Natural Gas (CNG) Vehicular Fuel Systems Code," 1998 edition.

Pressure Relief Devices (PRDs)
PRDs must be designed, constructed, manufactured and tested in accordance with ANIS/IAS PRD1 - 1998, "Pressure Relief Devices for Natural Gas Vehicle (NGV) Fuel Containers" and ANSI/IAS NGV2-1998, "Basic Requirements for Compressed Natural Gas Vehicle (NGV) Fuel Containers." All natural gas fuel system piping, including the PRD vent line, shall be stainless steel. All PRDs must be vented to outside.

Valves

Valves must be installed in accordance with ANIS/IAS NGV2 - 1998, "Basic Requirements for Compressed Natural Gas Vehicle (NGV) Fuel Containers" and NFPA 52, "Standard for Compressed Natural Gas (CNG) Vehicular Fuel Systems."

Fuel Filler
The fuel filler shall be located 7 to 38 feet (on a 30-, 35- and 40-foot coach) behind the centerline of the front door on a side determined by the Agency. The filler cap shall be retained to prevent loss and shall be recessed into the body.

The fill and vent receptacles shall be located within an enclosure on the right side of the bus. The access door shall be sized to allow full viewing of gauges, ease of hookups and maneuver of fuel nozzle.

The fuel fill receptacle and vent receptacle attachment shall be robust and capable of routine fueling connects/disconnects without deflection or metal fatigue, and capable of withstanding mechanical loads induced by a fueling drive away incident without attachment failure.

A static ground plug shall be installed near the fueling receptacle for grounding during refueling operations.

Fueling System
The CNG fueling port receptacle shall be an ANSI/AGA NGV1 or NGV2 certified receptacle as designated by the Agency. The coach shall be capable of being fueled by a nozzle determined by the Agency. The fueling port receptacle location shall be such that connection by fueling personnel can be performed without physical strain or interference. A dust cap shall be permanently "tethered" to the fueling port receptacle. The fueling port receptacle access door shall be equipped with an interlock sensor that disables the engine starting system when the access door is open, to prevent drive-aways. The interlock shall be of the type such that if the sensor fails, the coach will not start.

Fueling site characteristics such as pressure, flow rate, and temperature shall be provided by the Agency.

Defueling System
The CNG defueling port shall be an NGV-3.1/CGA-12.3 certified receptacle. The CNG defueling port shall be located on the curbside of the coach, in a location that is compatible with the Agency's defueling station operation. The de-fueling system shall incorporate the following characteristics:

- Dust cap permanently "tethered" to the defueling port.
- Device(s) to prevent inadvertent defueling. Specifications to be provided by Agency.
- Components compatible with Agency's defueling operation.
- The piping and fittings onboard the bus shall be sized to allow the fueling station to meet the following operating parameters:

The atmospheric-vent system shall allow a bus with 20,000 scf of onboard CNG storage to defuel to atmospheric pressure within 80 minutes.

3.14 Emissions and Exhaust

3.14.1 Exhaust Emissions

The engine and related systems shall meet all applicable emission and engine design guidelines and standards.

3.14.2 Exhaust System

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

3.14.3 Exhaust Aftertreatment

An exhaust aftertreatment system will be provided to ensure compliance to all applicable EPA regulations in effect.

Diesel Exhaust Fluid Injection
If required by the engine manufacturer to meet NOx level requirements specified by EPA, a DEF injection system will be provided. The DEF system will minimally include a tank, an injector, a pump, an ECM and a selective catalytic converter. The tanks shall be designed to store DEF in the operating environment described in the "Operating Environment" section. The DEF fluid lines shall be designed to prevent the DEF from freezing. The DEF injection system shall not be damaged from a cold soak at 10 °F.

3.14.4 Particulate Aftertreatment

If required by the engine manufacturer to meet particulate level requirements specified by EPA, a particulate trap will be provided. The particulate trap shall regenerate itself automatically if it senses clogging. Regeneration cycles and conditions will be defined by the engine manufacturer.

3.15 Structure – General

3.15.1 Structure – Design

The structure of the bus shall be designed to withstand the transit service conditions typical of an urban duty cycle throughout its service life. The vehicle structural frame shall be designed to operate with minimal maintenance throughout the 12-year design operating profile. The design operating profile specified by the Agency shall be considered for this purpose.

3.16 Altoona Testing

Prior to acceptance of first bus, the vehicle must have completed any FTA-required Altoona testing. Any items that required repeated repairs or replacement must undergo the corrective action with supporting test and analysis. A report clearly describing and explaining the failures and corrective actions taken to ensure any and all such failures will not occur shall be submitted to the Agency.

Altoona Test Report Provided to Agency Prior to Start of Bus Production
Prior to the start of any bus manufacturing or assembly processes, the structure of the proposed bus model shall have undergone appropriate structural testing and/or analysis, including the complete regimen of FTA required Altoona tests. Prior to assembly of the first bus, the OEM shall provide the Agency with a completed report of Altoona testing for the proposed bus model along with a plan of corrective action to address deficiencies, breakdowns and other issues identified during Altoona testing. The bus model tested shall match the bus model proposed for procurement, including structure, axles and drive-train. Base model and partial Altoona test reports are acceptable when the combination of these tests adequately represents the proposed bus model.

3.16.1 Structural Validation

Baseline Structural Analysis
The structure of the bus shall have undergone appropriate structural testing and/or analysis. At minimum, appropriate structural testing and analysis shall include Altoona testing or Finite Element Analysis (FEA).

3.17 Distortion

The bus, loaded to GVWR and under static conditions, shall not exhibit deflection or deformation that impairs the operation of the steering mechanism, doors, windows, passenger escape mechanisms or service doors. Static conditions shall include the vehicle at rest with any one wheel or dual set of wheels on a 6 in. curb or in a 6 in. deep hole.

3.18 Resonance and Vibration

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.

3.18.1 Engine Compartment Bulkheads

The passenger and engine compartment shall be separated by fire-resistant bulkheads. The engine compartment shall include areas where the engine and exhaust system are housed. This bulkhead shall preclude or retard propagation of an engine compartment fire into the passenger compartment and shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90A, dated October 20, 1993. Only necessary openings shall be allowed in the bulkhead, and these shall be fire-resistant. Any passageways for the climate control system air

shall be separated from the engine compartment by fire-resistant material. Piping through the bulkhead shall have fire-resistant fittings sealed at the bulkhead. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the bulkhead. Engine access panels in the bulkhead shall be fabricated of fire-resistant material and secured with fire-resistant fasteners. These panels, their fasteners and the bulkhead shall be constructed and reinforced to minimize warping of the panels during a fire that will compromise the integrity of the bulkhead.

3.18.2 Crashworthiness

The bus body and roof structure shall withstand a static load equal to 150 percent of the curb weight evenly distributed on the roof with no more than a 6 in. reduction in any interior dimension. Windows shall remain in place and shall not open under such a load. These requirements must be met without the roof-mounted equipment installed.

The bus shall withstand a 25 mph impact by a 4000-pound automobile at any side, excluding doorways, along either side of the bus with no more than 3 in. of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the bus interior.

Exterior panels below 35 in. from ground level shall withstand a static load of 2000 lbs applied perpendicular to the bus by a pad no larger than 5 sq in. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the bus.

3.19 Corrosion

The bus flooring, sides, roof, understructure and axle suspension components shall be designed to resist corrosion or deterioration from atmospheric conditions and de-icing materials for a period of 12 years or 500,000 miles, whichever comes first. It shall maintain structural integrity and nearly maintain original appearance throughout its service life, with the Agency's use of proper cleaning and neutralizing agents.

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

Additional Corrosion Resistance Requirements
The vehicle shall be constructed using only inherently corrosion-resistant materials and fasteners such as stainless steel or composites to minimize deterioration. The structure shall not require corrosion-preventive coatings or after-treatments, either during construction or throughout the service life of the vehicle.

3.20 Towing

Each towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the bus within 20 degrees of the longitudinal axis of the bus. If applicable, the rear towing device(s) shall not provide a toehold for unauthorized riders. The method of attaching the towing device shall not require the removal, or disconnection, of front suspension or steering components. Removal of the bike rack is permitted for attachment of towing devices.

A plug connector permanently mounted at the front of the bus shall provide for bus tail lamp, marker, stop and turn signal lamp operation as controlled from the towing vehicle. The connector shall include a spring-loaded dust- and water-resistant cap. Shop air connectors shall be provided at the front and rear of the bus and shall be capable of supplying all pneumatic systems of the bus with externally sourced compressed air. The location of these shop air connectors shall facilitate towing operations.

Lifted (Supported) Front Axle and Flat Towing Capability
The front towing devices shall allow attachment of adapters for a rigid tow bar and shall permit the lifting of the bus until the front wheels are clear off the ground in order to position the bus on the towing equipment by the front wheels. These devices shall also permit common flat towing.

Two rear recovery devices/tie downs shall permit lifting and towing of the bus for a short distance, such as in cases of an emergency, to allow access to provisions for front towing of bus. The method of attaching the tow bar or adapter shall require the specific approval of the Agency. Any tow bar or adapter exceeding 50 lbs should have means to maneuver or allow for ease of use and application. Each towing device shall accommodate a crane hook with a 1 in. throat.

3.21 Jacking

It shall be possible to safely jack up the bus, at curb weight, with a common 10-ton floor jack with or without special adapter, when a tire or dual set is completely flat and the bus is on a level, hard surface, without crawling under any portion of the bus. Jacking from a single point shall permit raising the bus sufficiently high to remove and reinstall a wheel and tire assembly. Jacking pads located on the axle or suspension near the wheels shall permit easy and safe jacking with the flat tire or dual set on a 6 in. high run-up block not wider than a single tire. The bus shall withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage.

Yellow Pads
Jacking pads shall be painted safety yellow.

3.22 Hoisting

The bus axles or jacking plates shall accommodate the lifting pads of a two-post (or three-post if 60 ft articulated bus) hoist system. Jacking plates, if used as hoisting pads, shall be designed to prevent the bus from falling off the hoist. Other pads or the bus structure shall support the bus on jack stands independent of the hoist.

3.23 Floor

3.23.1 Design

The floor shall be essentially a continuous plane, except at the wheel housings and platforms. 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 ¼ in. or installed in a fully sealed butt joint. Similarly, a molding or cover 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 degrees to allow for drainage.

Bi-level Floor Design
The floor design shall consist of two levels (bi-level construction). Aft of the rear door extending to the rear settee riser, the floor height may be raised to a height no more than 21 in. above the lower level, with equally spaced steps. An increase slope shall be allowed on the upper level, not to exceed 3.5 degrees off the horizontal.

3.23.2 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. Any adhesives, bolts or screws used to secure the floor to the structure shall last and remain effective throughout the 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 in. from the normal plane. The floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation. The floor, with coverings applied, shall withstand a static load of at least 150 lbs applied through the flat end of a ½ in. diameter rod, with 1/32-inch radius, without permanent visible deformation.

3.23.3 Construction

The floor shall consist of the subfloor and the floor covering that will last the life of the bus. The floor as assembled, including the sealer, attachments and covering, shall be waterproof, non-hygroscopic and resistant to mold growth. The subfloor shall be resistant to the effects of moisture, including decay (dry rot). It shall be impervious to wood-destroying insects such as termites.

Pressure-Preserved Plywood Panel
Plywood shall be certified at the time of manufacturing by an industry-approved third-party inspection agency such as APA – The Engineered Wood Association (formerly the American

Plywood Association). Plywood shall be of a thickness adequate to support design loads, manufactured with exterior glue, satisfy the requirements of a Group I Western panel as defined in PS 1-95 (Voluntary Product Standard PS 1-95, "Construction and Industrial Plywood") and be of a grade that is manufactured with a solid face and back. Plywood shall be installed with the highest-grade, veneer side up. Plywood shall be pressure-treated with a preservative chemical and process such as alkaline copper quaternary (ACQ) that prevents decay and damage by insects. Preservative treatments shall utilize no EPA-listed hazardous chemicals. The concentration of preservative chemicals shall be equal to or greater than required for an above ground level application. Treated plywood will be certified for preservative penetration and retention by a third party inspection agency. Pressure-preservative treated plywood shall have a moisture content at or below 15 percent.

3.24 Platforms

3.24.1 Driver's Area

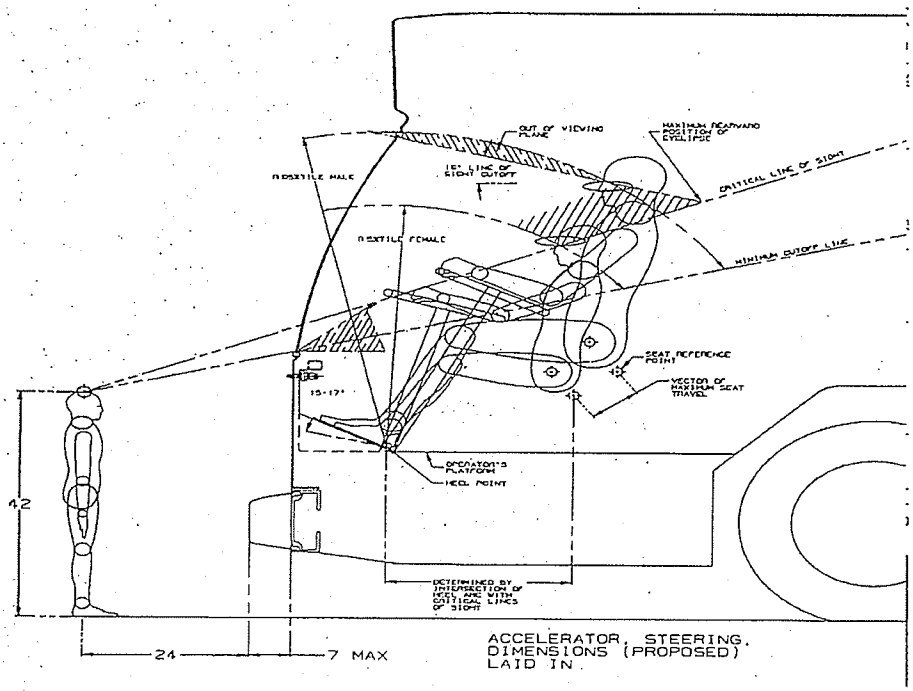
The covering of platform surfaces and risers, except where otherwise indicated, shall be the same material as specified for floor covering. Trim shall be provided along top edges of platforms unless integral nosing is provided.

No specific trim material specified.

3.24.2 Driver's Platform

The driver's platform shall be of a height such that, in a seated position, the driver can see an object located at an elevation of 42 in. above the road surface, 24 in. from the leading edge of the bumper. Notwithstanding this requirement, the platform height shall not position the driver such that the driver's vertical upward view is less than 15 degrees. A warning decal or sign shall be provided to alert the driver to the change in floor level. Figure 3 illustrates a means by which the platform height can be determined, using the critical line of sight.

FIGURE 3
Determining Platform Height



3.24.3 Farebox

Farebox placement should minimize impact to passenger access and minimize interference with the driver's line of sight.

Driver Interface Required; Platform Needed to Bring Height to Driver Access
If the driver's platform is higher than 12 in., then the farebox is to be mounted on a platform of suitable height to provide accessibility for the driver without compromising passengers' access.

3.24.4 Rear Step Area to Rear Area

If the vehicle is of a bi-level floor design, a rear step area shall be provided along the center aisle of the bus to facilitate passenger traffic between the upper and lower floor levels. This step area shall be cut into the rear platform and shall be approximately the aisle width, a minimum 12 in. deep and approximately half the height of the upper level relative to the lower level. The horizontal surface of this platform shall be covered with skid-resistant material with a visually contrasting nosing and shall be sloped slightly for drainage. A warning decal or sign shall be provided at the immediate platform area to alert passengers to the change in floor level.

3.25 Wheel Housing

3.25.1 Design and Construction

Sufficient clearance and air circulation shall be provided around the tires, wheels and brakes to preclude overheating when the bus is operating on the design operating profile. Wheel housings shall be constructed of corrosion-resistant and fire-resistant material.

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

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

The finish of the front wheel housings shall be scratch-resistant and complement interior finishes of the bus to minimize the visual impact of the wheel housing. If fiberglass wheel housings are provided, then they shall be color-impregnated to match interior finishes. The lower portion extending to approximately 10 to 12 in. above floor shall be equipped with scuff-resistant coating or stainless steel trim.

Wheel housings, as installed and trimmed, shall withstand impacts of a 2 in. steel ball with at least 200 ft-lbs of energy without penetration.

Wheel housings not equipped with seats or equipment enclosure shall have a horizontal assist mounted on the top portion of the housing no more than 4 in. higher than the wheel well housing.

3.25.2 Articulated Joint

Buses shall be equipped with a turntable that permanently joins the lead unit and trailing unit sections, allows relative motion between the sections about the pitch and yaw axes, and allows a small amount of relative roll between the sections without damage. A rotating turntable connection shall be provided between the lead unit and trailing unit to serve as a floor and allow passenger access between the sections of the bus under all operating conditions. The turntable design shall provide for all horizontal and vertical turns that the bus is capable of making without introducing discontinuities between the turntable and adjacent vehicle floors.

The structures and finishes in the interconnecting section shall be designed to prevent passenger injury under all conditions. The turntable floor cover plate shall be supported so that there will be no honing of the floor plate, making it sharp at the outer edge. The gap between the floor and the turntable shall be minimized in order to prevent a tripping hazard. It shall be designed for ease of access for inspection and repairs of all devices that are part of it or devices that pass through the turntable area. Under-floor turntable components shall be easily accessible. Floor plates must be easily lifted and secured in the open position by one person for inspection and repairs. Turntable seats shall be quickly and easily removable by one person. The under-floor turntable area shall

be completely enclosed by the bellows and bulkheads on the lead and trailing units to prevent drafts into the passenger compartment. The area between the turntable floor and the bellows shall be closed to prevent collection of trash in the bottom of the bellows. Closeouts shall be attached with removable fasteners. An access hatch shall be provided for routine maintenance (i.e., greasing, adjusting potentiometer, maintenance items).

An anti-jackknife joint shall be provided. This joint — by sensing vehicle speed, relative angle between the lead and trailing sections, throttle and braking actions, and any other necessary inputs — will control the degree of stiffness in the joint to ensure that the bus does not jackknife or operate in a dangerous or unsafe condition. The Agency shall approve the anti-jackknife joint. The interconnecting structure shall be designed to prevent separation of the lead and trailing units as a result of a road accident with a commercial or private vehicle. A means shall be provided so that the driver can override the control or recover from the situation. The bus shall be equipped with a reverse speed governor that shall apply the brake and accelerator interlocks when bus speed in reverse gear exceeds 1.5 mph, but the bus shall have sufficient power in reverse to back out of wheel locator depressions at a floor hoist. The proposed configuration of these devices and the reverse speed requirements shall be submitted for approval of the Agency.

Easy access shall be provided to overhead lines (electric, air, hydraulic, refrigerant) passing through the turntable. Hydraulic fittings shall be suitable for the given application and must be compatible with other fittings throughout the vehicle.

In order to prevent damage to the structure and electrical, air, hydraulic and refrigerant lines when the vertical or horizontal bending capabilities of the hinge are exceeded, the bus shall be provided with appropriate warning devices, brake interlocks and positive mechanical stops. These devices shall operate when the maximum bend angle is being approached in either plane.

3.25.3 Raceway

A raceway shall be provided through the turntable area to accommodate to maximum deflection of the turntable. The raceway shall prevent chafing, binding, rubbing, crimping or leakage of all hydraulic, air, fuel and system support lines, as well as all electrical and electronic cabling through or to the turntable area. Lines shall be secured, separated and labeled at the lead and trailing unit bulkheads. Separation shall be maintained on the flexible portion of all lines through the use of a raceway. All electrical terminations and hose fittings shall be easily visible and easily tightened or removed without removing any other component. Lines, routing, securement and labeling shall be approved by the Agency.

Bulkhead fitting shall be provided for all lines: air coolant, electrical and AC at both ends of the raceway. The bulkhead area shall be easily accessible for servicing.

3.25.4 Bellows

Replacement fabric type bellows with draft-free, no-sag bottom closure and water drains shall be provided between the lead and trailing sections to seal the bus interior and keep it free of water, dirt and drafts. Bellows hardware shall be corrosion resistant, and the under-floor area of the

bellows shall be easy to clean when necessary. The passageway between the lead unit and trailing unit shall have an inside cross section that is as nearly equal as possible to the inside cross section of the bus bodies, with no tripping or pinching hazards created by the turntable cross section or closeouts. The bellows shall be durable, and its supporting structure and stiffeners shall support the bellows material in a neat, sag-free manner. The Contractor shall supply information on the actual service life achieved by the type of bellows being proposed. A sample of the bellows and attaching hardware may be requested for evaluation at the Agency's option. Bellows shall be approved by the Agency.

3.26 Suspension

3.26.1 General Requirements

The front, rear and mid (if articulated) suspensions shall be pneumatic type. The basic suspension system shall last the service life of the bus without major overhaul or replacement. Adjustment points shall be minimized and shall not be subject to a loss of adjustment in service. Routine adjustments shall be easily accomplished by limiting the removal or disconnecting the components.

3.26.2 Alignment

All axles should be properly aligned so the vehicle tracks accurately within the size and geometry of the vehicle.

3.26.3 Springs and Shock Absorbers

Suspension Travel
The suspension system shall permit a minimum wheel travel of 2.75 in. jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 2.75 in. rebound-downward travel when the bus comes off a bump and the wheels fall relative to the body. Elastomeric bumpers shall be provided at the limit of jounce travel. Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers. Suspensions shall incorporate appropriate devices for automatic height control so that regardless of load the bus height relative to the centerline of the wheels does not change more than ½ in. at any point from the height required. The safe operation of a bus cannot be impacted by ride height up to 1 in. from design normal ride height.

Damping
Vertical damping of the suspension system shall be accomplished by hydraulic shock absorbers mounted to the suspension arms or axles and attached to an appropriate location on the chassis. Damping shall be sufficient to control coach motion to three cycles or less after hitting road perturbations. The shock absorber bushing shall be made of elastomeric material that will last the life of the shock absorber. The damper shall incorporate a secondary hydraulic rebound stop.

Lubrication
Standard Grease Fittings

All elements of steering, suspension and drive systems requiring scheduled lubrication shall be provided with grease fittings conforming to SAE Standard J534. These fittings shall be located for ease of inspection and shall be accessible with a standard grease gun from a pit or with the bus on a hoist. Each element requiring lubrication shall have its own grease fitting with a relief path. The lubricant specified shall be standard for all elements on the bus serviced by standard fittings and shall be required no less than every 6000 miles.

Kneeling
A kneeling system shall lower the entrance(s) of the bus a minimum of 2.5 in. during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the entrance door(s) by the driver. The kneeling control shall provide the following functions:

- Downward control must be held to allow downward kneeling movement.
- Release of the control during downward movement must completely stop the lowering motion and hold the height of the bus at that position.
- Upward control actuation must allow the bus to return to normal floor height without the driver having to hold the control.

The brake and throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion. The bus shall kneel at a maximum rate of 1.25 in. per second at essentially a constant rate. After kneeling, the bus shall rise within 3 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVWR. During the lowering and raising operation, the maximum vertical acceleration shall not exceed 0.2g, and the jerk shall not exceed 0.3g/second.

An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm will sound simultaneously with the operation of the kneeler to alert passengers and bystanders. A warning light mounted near the curbside of the front door, a minimum 2.5 in. diameter amber lens, shall be provided that will blink when the kneel feature is activated. Kneeling shall not be operational while the wheelchair ramp is deployed or in operation.

3.27 Wheels and Tires

3.27.1 Wheels
All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tires in size and load-carrying capacity. Front wheels and tires shall be balanced as an assembly per SAE J1986.

Two-sided polished aluminum rims.

Also provide pricing for this alternate option:
Painted Steel
Wheels and rims shall be hub-piloted with powder coated steel (maximum 3.5 mil) and shall resist rim flange wear.

3.27.2 Tires

Tires shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tire at GVWR shall not exceed the tire Supplier's rating.

The tires shall be provided under a lease agreement between Lextran and the tire supplier, currently Goodyear.

3.28 Steering

Hydraulically assisted steering shall be provided. The steering gear shall be an integral type with the number and length of flexible lines minimized or eliminated. Engine driven hydraulic pump shall be provided for power steering.

Also provide pricing for this alternate option:
Electrically-assisted steering shall be provided to reduce steering effort.

3.28.1 Steering Axle

Oiled-Type Front Bearings
The front axle shall be non-driving with a load rating sufficient for the bus loaded to GVWR and shall be equipped with sealed, oiled-type front wheel bearings.

All friction points on the front axle shall be equipped with replaceable bushings or inserts and, if needed, lubrication fittings easily accessible from a pit or hoist.

The steering geometry of the outside (frontlock) wheel shall be within 2 degrees of true Ackerman up to 50 percent lock measured at the inside (backlock) wheel. The steering geometry shall be within 3 degrees of true Ackerman for the remaining 100 percent lock measured at the inside (backlock) wheel.

3.28.2 Wheel

Turning Effort
Steering effort shall be measured with the bus at GVWR, stopped with the brakes released and the engine at normal idling speed on clean, dry, level, commercial asphalt pavement and the tires inflated to recommended pressure.

Under these conditions, the torque required to turn the steering wheel 10 degrees shall be no less than 5 ft-lbs and no more than 10 ft-lbs. Steering torque may increase to 70 ft-lbs when the wheels are approaching the steering stops, as the relief valve activates.

Power steering failure shall not result in loss of steering control. With the bus in operation, the steering effort shall not exceed 55 lbs at the steering wheel rim, and perceived free play in the

steering system shall not materially increase as a result of power assist failure. Gearing shall require no more than seven turns of the steering wheel lock-to-lock.

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

Steering Wheel, General
The steering wheel diameter shall be approximately 18-20 in.; the rim diameter shall be ⅞ in. to 1¼ in. and shaped for firm grip with comfort for long periods of time.

Steering wheel spokes and wheel thickness shall ensure visibility of the dashboard so that vital instrumentation is clearly visible at center neutral position (within the range of a 95th-percentile male, as described in SAE 1050a, Sections 4.2.2 and 4.2.3). Placement of steering column must be as far forward as possible, but either in line with or behind the instrument cluster.

Steering Column Tilt
The steering column shall have full tilt capability with an adjustment range of no less than 40 degrees from the vertical and easily adjustable by the driver.

Steering Wheel Telescopic Adjustment
The steering wheel shall have full telescoping capability and have a minimum telescopic range of 2 in. and a minimum low-end adjustment of 29 in., measured from the top of the steering wheel rim in the horizontal position to the cab floor at the heel point.

TABLE 3
Steering Wheel Height[1] Relative to Angle of Slope

At Minimum Telescopic Height Adjustment (29 in.)		At Maximum Telescopic Height Adjustment (5 in.)	
Angle of Slope	Height	Angle of Slope	Height
0 degrees	29 in.	0 degrees	34 in.
15 degrees	26.2 in.	15 degrees	31.2 in.
25 degrees	24.6 in.	25 degrees	29.6 in.
35 degrees	22.5 in.	35 degrees	27.5 in.

1. Measured from bottom portion closest to driver.

3.29 Drive Axle
The bus shall be driven by a heavy-duty axle with a load rating sufficient for the bus loaded to GVWR. The drive axle shall have a design life to operate for not less than 300,000 miles on the design operating profile without replacement or major repairs. The lubricant drain plug shall be magnetic type. If a planetary gear design is employed, the oil level in the planetary gears shall be easily checked through the plug or sight gauge. The axle and driveshaft components shall be rated for both propulsion and retardation modes with respect to duty cycle.

NOTE: The retardation duty cycle can be more aggressive than propulsion.

The drive shaft shall be guarded to prevent hitting any critical systems, including brake lines, coach floor or the ground in the event of a tube or universal joint failure.

3.29.1 Non-Drive Axle

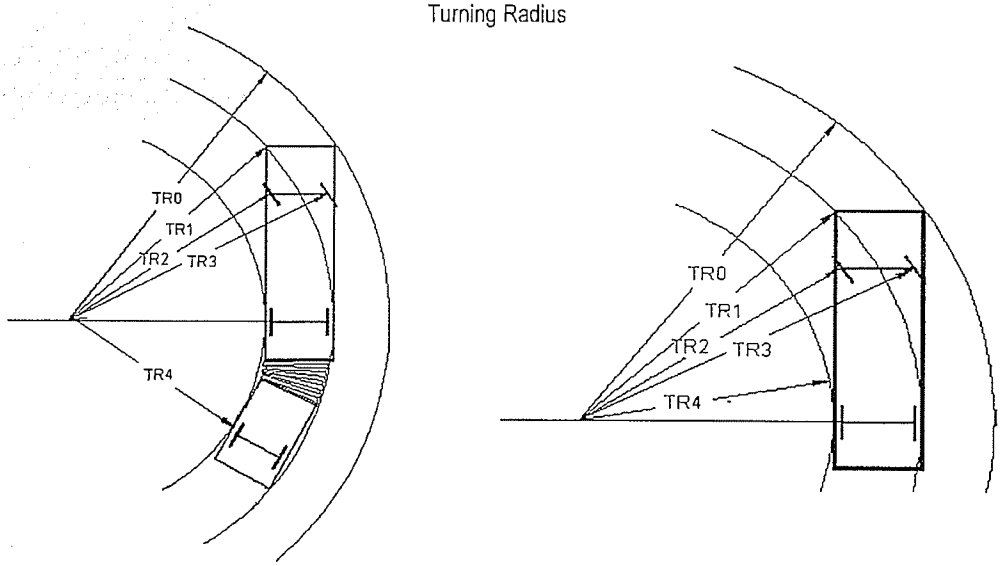
The non-drive axle is the drive axle without the drive gear with a load rating sufficient for the load to GVWR.

3.30 Turning Radius

TABLE 4
Maximum Turning Radius

Bus Length (approximate)	Maximum Turning Radius (see Figure 4)	Agency Requirement
30 ft	31 ft (TR0)	
35 ft	39 ft (TR0)	
40 ft	44 ft (TR0)	
45 ft	49 ft (TR0)	
60 ft	43 ft (outside front axle, TR0) 17 ft (inside rearmost axle, TR4)	

FIGURE 4
Turning Radius



3.31 Brakes

3.31.1 Service Brake

Brakes shall be self-adjusting. Brake wear indicators (visible brake sensors) shall be provided on exposed push rods.

3.31.2 Actuation

Air-Actuated Brakes
Service brakes shall be controlled and actuated by a compressed air system. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 70 lbs at a point 7 in. above the heel point of the pedal to achieve maximum braking. The heel point is the location of the driver's heel when his or her foot is rested flat on the pedal and the heel is touching the floor or heel pad of the pedal. The ECU for the ABS system shall be protected, yet in an accessible location to allow for ease of service.

The total braking effort shall be distributed between all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations. Manufacturer shall demonstrate compliance by providing a copy of a thermo dynamic brake balance test upon request.

Automatic Traction Control
Microprocessor controlled automatic traction control (ATC) shall be provided.

3.31.3 Friction Material

The brake linings shall be made of non-asbestos material. In order to aid maintenance personnel in determining extent of wear, a provision such as a scribe line or chamfer indicating the thickness at which replacement becomes necessary shall be provided on each brake lining. The complete brake lining wear indicator shall be clearly visible from the hoist or pit without removing backing plates.

3.31.4 Hubs and Drums

Replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design. Wheel bearing and hub seals and unitized hub assemblies shall not leak or weep lubricant when operating on the design operating profile for the duration of the initial manufacturer's warranty.

Drum Brakes
The bus shall be equipped with brake drums. Brake drums shall allow machining for oversized linings per manufacturers specifications.

The brake system material and design shall be selected to absorb and dissipate heat quickly so that the heat generated during braking operation does not glaze brake linings.

Also provide pricing for this alternate option:
The brake discs shall allow machining of each side of the disc to obtain smooth surfaces per manufacturer's specifications.

3.31.5 Parking/Emergency Brake

Air Brakes
The parking brake shall be a spring-operated system, actuated by a valve that exhausts compressed air to apply the brakes. The parking brake may be manually enabled when the air pressure is at the operating level per FMVSS 121.

3.32 Interlocks

3.32.1 Passenger Door Interlocks

To prevent opening mid and rear passenger doors while the bus is in motion, a speed sensor shall be integrated with the door controls to prevent the mid/rear doors from being enabled or opened unless the bus speed is less than 2 mph.

To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position, and a brake interlock shall engage the service brake system to stop movement of the bus when the driver's door control is moved to a mid/rear door enable or open position, or a mid or rear door panel is opened more than 3 in. from the fully closed position (as measured at the leading edge of the door panel). The interlock engagement shall bring the bus to a smooth stop and shall be capable of holding a fully loaded bus on a 6 percent grade, with the engine at idle and the transmission in gear, until the interlocks are released. These interlock functions shall be active whenever the vehicle Master Run Switch is in any run position.

All door systems employing brake and accelerator interlocks shall be supplied with supporting failure mode effects analysis (FEMA) documentation, which demonstrates that failure modes are of a failsafe type, thereby never allowing the possibility of release of interlock while an interlocked door is in and unsecured condition, unless the door master switch has been actuated to intentionally release the interlocks.

Requiring Accelerator Interlock Whenever Front Doors Are Open
An accelerator interlock shall lock the accelerator in the closed position, and a brake interlock shall engage the service brake system to stop movement of the bus whenever front doors are open.

3.33 Pneumatic System

3.33.1 General

The bus air system shall operate the air-powered accessories and the braking system with reserve capacity. New buses shall not leak down more than 5 psi over a 15-minute period of time as indicated on the dash gauge.

Provision shall be made to apply shop air to the bus air systems. A quick disconnect fitting shall be easily accessible and located in the engine compartment and near the front bumper area for

towing. Retained caps shall be installed to protect fitting against dirt and moisture when not in use. Air for the compressor shall be filtered. The air system shall be protected per FMVSS 121.

3.33.2 Air Compressor

The engine-driven air compressor shall be sized to charge the air system from 40 psi to the governor cut-off pressure in less than 4 minutes while not exceeding the fast idle speed setting of the engine.

3.33.3 Air Lines and Fittings

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844 for nylon tubing if not subject to temperatures over 200 °F. The air on the delivery side of the compressor where it enters nylon housing shall not be above the maximum limits as stated in SAE J844. Nylon tubing shall be installed in accordance with the following color-coding standards:

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

Line supports shall prevent movement, flexing, tension, strain and vibration. Copper lines shall be supported to prevent the lines from touching one another or any component of the bus. To the extent practicable and before installation, the lines shall be pre-bent on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation. Rigid lines shall be supported at no more than 5-ft intervals. Nylon lines may be grouped and shall be supported at 30 in. intervals or less.

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

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

3.33.4 Air Reservoirs

All air reservoirs shall meet the requirements of FMVSS Standard 121 and SAE Standard J10 and shall be equipped with drain plugs and guarded or flush type drain valves. Major structural

members shall protect these valves and any automatic moisture ejector valves from road hazards. Reservoirs shall be sloped toward the drain valve. All air reservoirs shall have drain valves that discharge below floor level with lines routed to eliminate the possibility of water traps and/or freezing in the drain line.

3.33.5 Air System Dryer

An air dryer shall prevent accumulation of moisture and oil in the air system. The air dryer system shall include one or more replaceable desiccant cartridges.

The air system shall be equipped with an air dryer located before the no. 1 air tank and as far from the compressor as possible to allow air to cool prior to entering the air dryer.

3.34 Electrical, Electronic and Data Communication Systems – Overview

The electrical system will consist of vehicle battery systems and components that generate, distribute and store power throughout the vehicle. (e.g., generator, voltage regulator, wiring, relays, and connectors).

Electronic devices are individual systems and components that process and store data, integrate electronic information or perform other specific functions.

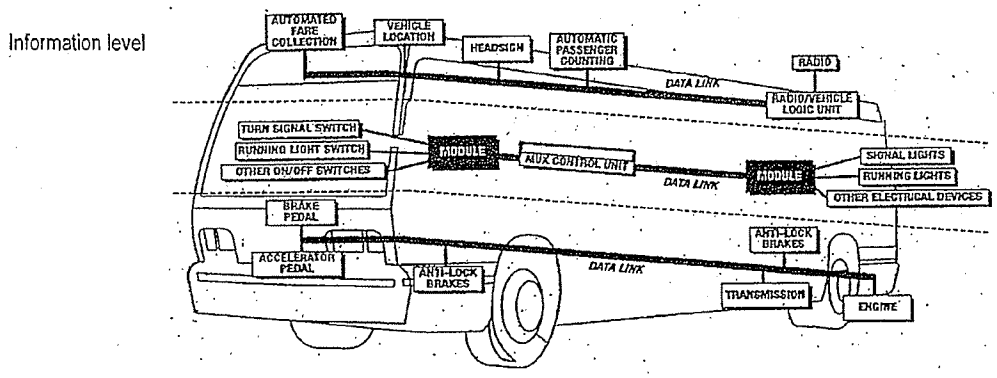
The data communication system consists of the bi-directional communications networks that electronic devices use to share data with other electronic devices and systems. Communication networks are essential to integrating electronic functions, both onboard the vehicle and off.

Information level systems that require vehicle information for their operations or provide information shall adhere to J1939 data standard.

Data communications systems are divided into three levels to reflect the use of multiple data networks:

- **Drivetrain level:** Components related to the drivetrain including the propulsion system components (engine, transmission and hybrid units), and anti-lock braking system (ABS), which may include traction control.
- **Information level:** Components whose primary function is the collection, control or display of data that is not necessary to the safe drivability of the vehicle (i.e., the vehicle will continue to operate when those functions are inoperable). These components typically consist of those required for automatic vehicle location (AVL) systems, destination signs, fare boxes, passenger counters, radio systems, automated voice and signage systems, video surveillance and similar components.
- **Multiplex level:** Electrical or electronic devices controlled through input/output signals such as discrete, analog and serial data information (i.e., on/off switch inputs, relay or relay control outputs). Multiplexing is used to control components not typically found on the drivetrain or information levels, such as lights; wheelchair lifts; doors; heating, ventilation and air conditioning (HVAC) systems; and gateway devices.

FIGURE 5
Data Communications Systems Levels



3.34.1 Modular Design

Design of the electrical, electronic and data communication systems shall be modular so that each electronic device, apparatus panel, or wiring bundle is easily separable from its interconnect by means of connectors.

Powerplant wiring shall be an independent wiring harness. Replacement of the engine compartment wiring harness(es) shall not require pulling wires through any bulkhead or removing any terminals from the wires.

3.35 Environmental and Mounting Requirements

The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they will be installed, as recommended in SAE J1455.

Electrical and electronic equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system when operating within the design operating profile. As a recommendation, no vehicle component shall generate, or be affected by, electromagnetic interference or radio frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment as defined in SAE J1113 and UNECE Council Directive 95/54 (R 10).

The Agency shall follow recommendations from bus manufacturers and subsystem Suppliers regarding methods to prevent damage from voltage spikes generated from welding, jump starts, shorts, etc.

3.35.1 Hardware Mounting

The mounting of the hardware shall not be used to provide the sole source ground, and all hardware shall be isolated from potential EMI/RFI, as referenced in SAE J1113.

All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray.

All electrical/electronic hardware mounted on the exterior of the vehicle that is not designed to be installed in an exposed environment shall be mounted in a sealed enclosure.

All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.

3.36 General Electrical Requirements

3.36.1 Batteries

Low-Voltage Batteries (24V)
Four Group 31 Maintenance-Free Batteries
Four Group 31 Series deep cycling maintenance-free battery units shall be provided. Each battery shall have a minimum of 700 cold cranking amps. Each battery shall have a purchase date no more than one year from the date of release for shipment to the Agency.

Also provide pricing for this alternate option:
Capacitor Start System
A capacitor start system will be provided to assist with starting the bus. This system will be isolated from the regular starting system to prevent the capacitors from draining during regular operation or long periods of down time.

Same Size Terminal Ends
Positive and negative terminal ends shall be the same size.

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

2100 strand 4/0 cable or greater recommended.

Color code each voltage.

Junp Start
Jump-Start Connector

A jump-start connector, red for 24V and blue for 12V, shall be provided in the engine compartment, equipped with dust cap and adequately protected from moisture, dirt and debris.

Battery Compartment
The battery compartment shall prevent accumulation of snow, ice and debris on top of the batteries and shall be vented and self-draining. It shall be accessible only from the outside of the vehicle. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from the electrolyte. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals from shorting on the door if the door is damaged in an accident or if a battery comes loose.

The vehicle shall be equipped with a 12VDC and 24VDC quick disconnect switch(es). The battery compartment door shall conveniently accommodate operation of the 12VDC and 24VDC quick disconnect switch(es).

The battery quick disconnect access door shall be identified with a decal. The decal size shall not be less than 3.5 × 5 in. (8.89 × 12.7 cm).

The battery hold-down bracket shall be constructed of a non-metallic material (plastic or fiberglass).

This access door shall not require any special locking devices to gain access to the switch, and it shall be accessible without removing or lifting the panel. The door shall be flush-fitting and incorporate a spring tensioner or equal to retain the door in a closed position when not in use.

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

If not located in the engine compartment, the same fire-resistant properties must apply to the battery compartment. No sparking devices should be located within the battery box.

Auxiliary Electronic Power Supply
If required, gel-pack, or any form of sealed (non-venting) batteries used for auxiliary power are allowed to be mounted on the interior of the vehicle if they are contained in an enclosed, non-airtight compartment and accessible only to maintenance personnel. This compartment shall contain a warning label prohibiting the use of lead-acid batteries.

Master Battery Switch
A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12V and 24V), except for safety devices such as the fire suppression system and other systems as specified. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds for deactivation and

prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service.

Turning the master switch off with the powerplant operating shall shut off the engine and shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load.

Single Switch
The batteries shall be equipped with a single switch for disconnecting both 12V and 24V power.

Low-Voltage Generation and Distribution
The low-voltage generating system shall maintain the charge on fully charged batteries, except when the vehicle is at standard idle with a total low voltage generator load exceeding 70 percent of the low voltage generator nameplate rating.

Voltage monitoring and over-voltage output protection (recommended at 32V) shall be provided.

Dedicated power and ground shall be provided as specified by the component or system manufacturer. Cabling to the equipment must be sized to supply the current requirements with no greater than a 5 percent volt drop across the length of the cable.

Circuit Protection
All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by current-limiting devices such as circuit breakers, fuses or solid state devices sized to the requirements of the circuit. Electronic circuit protection for the cranking motor shall be provided to prevent engaging of the motor for more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. This requirement applies to in-line fuses supplied by either the Contractor or a Supplier. Fuse holders shall be constructed to be rugged and waterproof. All manual reset circuit breakers critical to the operation of the bus shall be mounted in a location convenient to the Agency mechanic with visible indication of open circuits. The Agency shall consider the application of automatic reset circuit breakers on a case-by-case basis. The Contractor shall show all in-line fuses in the final harness drawings. Any manually resettable circuit breakers shall provide a visible indication of open circuits. Any manually resettable circuit breakers shall provide a visible indication of open circuits.

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

3.36.2 Grounds

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops.

No more than four ground ring/spade terminal connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded through the chassis.

3.36.3 Low Voltage/Low Current Wiring and Terminals

All power and ground wiring shall conform to specification requirements of SAE Recommended Practice J1127, J1128 and J1292. Double insulation shall be maintained as close to the junction box, electrical compartment or terminals as possible. The requirement for double insulation shall be met by wrapping the harness with plastic electrical tape or by sheathing all wires and harnesses with non-conductive, rigid or flexible conduit.

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

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

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

All wiring harnesses over 5 ft long and containing at least five wires shall include 10 percent (minimum one wire) excess wires for spares. This requirement for spare wires does not apply to data links and communication cables. Wiring harness length shall allow end terminals to be replaced twice without pulling, stretching or replacing the wire. Terminals shall be crimped to the wiring according to the connector manufacturer's recommendations for techniques and tools. All cable connectors shall be locking type, keyed and sealed, unless enclosed in watertight cabinets or vehicle interior. Pins shall be removable, crimp contact type, of the correct size and rating for the wire being terminated. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use different inserts or different insert orientations to prevent incorrect connections.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, only stranded wire shall be used. Insulation clearance shall ensure that wires have a minimum of "visible clearance" and a maximum of two times the conductor diameter or 1/16 in., whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires.

Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used, it shall meet these additional requirements:

- It shall include a mechanical clamp in addition to solder on the splice.
- The wire shall support no mechanical load in the area of the splice.
- The wire shall be supported to prevent flexing.

All splicing shall be staggered in the harness so that no two splices are positioned in the same location within the harness.

Wiring located in the engine compartment shall be routed away from high-heat sources or shielded and/or insulated from temperatures exceeding the wiring and connector operating requirements.

The instrument panel and wiring shall be easily accessible for service from the driver's seat or top of the panel. The instrument panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

3.36.4 Electrical Components

All electrical components, including switches, relays, flashers and circuit breakers, shall be heavy-duty designs with either a successful history of application in heavy-duty vehicles or design specifications for an equivalent environment.

All electric motors shall be heavy-duty brushless type where practical, and have a continuous duty rating of no less than 40,000 hours (except cranking motors, washer pumps and wiper motors). All electric motors shall be easily accessible for servicing.

3.36.5 Electrical Compartments

All relays, controllers, flashers, circuit breakers and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion-resistant and sealed. The components and their functions in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel and abrasion.

The front compartment shall be completely serviceable from the driver's seat, vestibule or from the outside. "Rear start and run" controls shall be mounted in an accessible location in the engine compartment and shall be protected from the environment.

3.37 General Electronic Requirements

If an electronic component has an internal real-time clock, it shall provide its own battery backup to monitor time when battery power is disconnected, and/or it may be updated by a network

component. If an electronic component has an hour meter, it shall record accumulated service time without relying on battery backup.

All electronic component Suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage (over 32V DC on a 24V DC nominal voltage rating with a maximum of 50V DC) and reverse polarity conditions. If an electronic component is required to interface with other components, it shall not require external pull-up and/or pull-down resistors. Where this is not possible, the use of a pull-up or pull-down resistor shall be limited as much as possible and easily accessible and labeled.

3.37.1 Wiring and Terminals

Kinking, grounding at multiple points, stretching and reducing the bend radius below the manufacturer's recommended minimum shall not be permitted.

Discrete I/O (Inputs/Outputs)
All wiring to I/O devices, either at the harness level or individual wires, shall be labeled, stamped or color-coded in a fashion that allows unique identification at a spacing not exceeding 4 in. Wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common nodes of each I/O terminal.

Shielding
All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one location only, typically at one end of the cable. However certain standards or special requirements, such as SAE J1939 or RF applications, have separate shielding techniques that also shall be used as applicable.

NOTE: A shield grounded at both end forms a ground loop, which can cause intermittent control or faults.

When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

Communications
The data network cabling shall be selected and installed according to the selected protocol requirements. The physical layer of all network communication systems shall not be used for any purpose other than communication between the system components, unless provided for in the network specifications.

Communications networks that use power line carriers (e.g., data modulated on a 24V-power line) shall meet the most stringent applicable wiring and terminal specifications.

Radio Frequency (RF)

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc., shall use coaxial cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss that will attribute to attenuation of the signal. Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. If this cannot be done, then a conduit of sufficient size shall be provided for ease of attachment of antenna and cable assembly. The corresponding component vendors shall be consulted for proper application of equipment, including installation of cables.

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

3.38 Multiplexing

3.38.1 General

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

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

Ten percent of the total number of inputs and outputs, or at least one each for each voltage type utilized (0V, 12V, 24V), at each module location shall be designated as spares.

3.38.2 System Configuration

Multiplexing may either be distributed or centralized. A distributed system shall process information on multiple control modules within the network. A centralized system shall process the information on a single control module. Either system shall consist of several modules connected to form a control network.

I/O Signals
The input/output for the multiplex system may contain three types of electrical signals: discrete, analog or serial data.

Discrete signals shall reflect the on/off status of switches, levers, limit switches, lights, etc. Analog signals shall reflect numerical data as represented by a voltage signal (0-12V, 10-24V, etc.) or current signal (4-20 mA). Both types of analog signals shall represent the status of

variable devices such as rheostats, potentiometers, temperature probes, etc. Serial data signals shall reflect ASCII or alphanumeric data used in the communication between other on-board components.

3.39 Data Communications

3.39.1 General

All data communication networks shall be either in accordance with a nationally recognized interface standard, such as those published by SAE, IEEE or ISO, or shall be published to the Agency with the following minimum information:

- Protocol requirements for all timing issues (bit, byte, packet, inter-packet timing, idle line timing, etc.) packet sizes, error checking and transport (bulk transfer of data to/from the device).
- Data definition requirements that ensure access to diagnostic information and performance characteristics.
- The capability and procedures for uploading new application or configuration data.
- Access to revision levels of data, application software and firmware.
- The capability and procedures for uploading new firmware or application software.
- Evidence that applicable data shall be broadcast to the network in an efficient manner such that the overall network integrity is not compromised.

Any electronic vehicle components used on a network shall be conformance tested to the corresponding network standard.

3.39.2 Drivetrain Level

Drivetrain components, consisting of the engine, transmission, retarder, anti-lock braking system and all other related components, shall be integrated and communicate fully with respect to vehicle operation with data using SAE Recommended Communications Protocols such as J1939 and/or J1708/J1587 with forward and backward compatibilities or other open protocols.

Diagnostics, Fault Detection and Data Access
Drivetrain performance, maintenance and diagnostic data, and other electronic messages shall be formatted and transmitted on the communications networks.

The drivetrain level shall have the ability to record abnormal events in memory and provide diagnostic codes and other information to service personnel. At a minimum, this network level shall provide live/fail status, current hardware serial number, software/data revisions and uninterrupted timing functions.

Programmability (Software)
The drivetrain level components shall be programmable by the Agency with limitations as specified by the sub-system Supplier.

3.39.3 Multiplex Level

Data Access
At a minimum, information shall be made available via a communication port on the multiplex system. The location of the communication port shall be easily accessible. A hardware gateway and/or wireless communications system are options if requested by the Agency. The communication port(s) shall be located as specified by the Agency.

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

In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via either a personal computer or a handheld unit. Either unit shall have the ability to check logic function. The diagnostic data can be incorporated into the information level network or the central data access system.

Provide Mock-Up Board
A mock-up board, where key components of the multiplexing system are replicated on a functional model, shall be provided as a tool for diagnostic, design verification and training purposes. If required, the mock-up board should priced separately in the Pricing Schedule.

Programmability (Software)
The multiplex system shall have security provisions to protect its software from unwanted changes. This shall be achieved through any or all of the following procedures:

- password protection
- limited distribution of the configuration software
- limited access to the programming tools required to change the software
- hardware protection that prevents undesired changes to the software

Provisions for programming the multiplex system shall be possible through a PC or laptop. The multiplex system shall have proper revision control to ensure that the hardware and software are identical on each vehicle equipped with the system. Revision control shall be provided by all of the following:

- hardware component identification where labels are included on all multiplex hardware to identify components
- hardware series identification where all multiplex hardware displays the current hardware serial number and firmware revision employed by the module
- software revision identification where all copies of the software in service displays the most recent revision number
- a method of determining which version of the software is currently in use in the multiplex system

Revision control labels shall be physically located near the programming port.

3.39.4 Electronic Noise Control

Electrical and electronic sub-systems and components on all buses shall not emit electromagnetic radiation that will interfere with on-board systems, components or equipment, telephone service, radio or TV reception or violate regulations of the Federal Communications Commission.

Electrical and electronic sub-systems on the coaches shall not be affected by external sources of RFI/EMI. This includes, but is not limited to, radio and TV transmission, portable electronic devices including computers in the vicinity of or onboard the buses, ac or dc power lines and RFI/EMI emissions from other vehicles.

3.40 Driver's Area Controls

3.40.1 General

In general when designing the driver's area, it is recommended that SAE J833, "Human Physical Dimensions," be used.

Switches and controls shall be divided into basic groups and assigned to specific areas, in conformance with SAE Recommended Practice J680, Revised 1988, "Location and Operation of Instruments and Controls in Motor Truck Cabs," and be essentially within the hand reach envelope described in SAE Recommended Practice J287, "Driver Hand Control Reach."

3.40.2 Glare

The driver's work area shall be designed to minimize glare to the extent possible. Objects within and adjacent to this area shall be matte black or dark gray in color wherever possible to reduce the reflection of light onto the windshield. The use of polished metal and light-colored surfaces within and adjacent to the driver's area shall be avoided.

3.40.3 Visors/Sun Shades

Front and Side Sun Shade/Visor
Adjustable sun visor(s) shall be provided for the driver's windshield and the driver's side window. Visors shall be shaped to minimize light leakage between the visor and windshield pillars. Visors shall store out of the way and shall not obstruct airflow from the climate control system or interfere with other equipment, such as the radio handset or the destination control. Deployment of the visors shall not restrict vision of the rearview mirrors. Visor adjustments shall be made easily by hand with positive locking and releasing devices and shall not be subject to damage by over-tightening. Sun visor construction and materials shall be strong enough to resist breakage during adjustments. Visors may be transparent, but shall not allow a visible light transmittance in excess of 10 percent. Visors, when deployed, shall be effective in the driver's field of view at angles more than 5 degrees above the horizontal.

3.40.4 Driver's Controls

Frequently used controls must be in easily accessible locations. These include the door control, kneel control, windshield wiper/washer controls, ramp, and lift and run switch. Any switches and controls necessary for the safe operation of the bus shall be conveniently located and shall provide for ease of operation. They shall be identifiable by shape, touch and permanent markings. Controls also shall be located so that passengers may not easily tamper with control settings.

All panel-mounted switches and controls shall be marked with easily read identifiers. Graphic symbols shall conform to SAE Recommended Practice J2402, "Road Vehicles – Symbols For Controls, Indicators, and Tell Tales," where available and applicable. Color of switches and controls shall be dark with contrasting typography or symbols.

Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from a convenient location. Switches, controls and instruments shall be dust- and water-resistant.

3.40.5 Normal Bus Operation Instrumentation and Controls

The following list identifies bus controls used to operate the bus. These controls are either frequently used or critical to the operation of the bus. They shall be located within easy reach of the operator. The operator shall not be required to stand or turn to view or actuate these controls unless specified otherwise.

Systems or components monitored by onboard diagnostics system shall be displayed in clear view of the operator and provide visual and/or audible indicators. The intensity of indicators 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 be illuminated using backlighting.

The indicator panel shall be located in Area 1 or Area 5, within easy view of the operator instrument panel. All indicators shall have a method of momentarily testing their operation. The audible alarm shall be tamper-resistant and shall have an outlet level between 80 and 83 dBA when measured at the location of the operator's ear.

On-board displays visible to the operator shall be limited to indicating the status of those functions described herein that are necessary for the operation of the bus. All other indicators needed for diagnostics and their related interface hardware shall be concealed and protected from unauthorized access. Table 3 represents instruments and alarms. The intent of the overall physical layout of the indicators shall be in a logical grouping of systems and severity nature of the fault.

Consideration shall be provided for future additions of spare indicators as the capability of onboard diagnostic systems improves. Blank spaces shall contain LEDs.

TABLE 5
Transit Bus Instruments and Alarms

Device	Description	Location	Function	Visual/ Audible
Master run switch	Rotary, four-position detent	Side console	Master control for bus, off, day run, night run and clearance ID lights	
Engine start, front	Approved momentary switch	Side console	Activates engine starter motor	
Engine start, rear	Approved momentary switch	Engine compartment	Activates engine starter motor	
Engine run, rear	Three-position toggle switch	Engine compartment	Permits running engine from rear start, normal front run position and off	Amber light
Drive selector	Touch panel switch	Side console	Provides selection of propulsion: forward, reverse and neutral	Gear selection
HVAC	Switch or switches to control HVAC	Side console	Permits selection of passenger ventilation: off, cool, heat, low fan, high fan or full auto with on/off only	
Driver's ventilation	Rotary, three-position detent	Side console or Dash left wing	Permits supplemental ventilation: fan off, low or high	
Defroster fan	Rotary, three-position detent	Side console or Dash left wing	Permits defroster: fan off, low, medium or high	
Defroster temperature	Variable position	Side console or Dash left wing	Adjusts defroster water flow and temperature	
Windshield wiper	One-variable rotary position operating both wipers	Dash left wing	Variable speed control of left and right windshield wipers	
Windshield washer	Push button	Dash left wing	Activates windshield washers	
Dash panel lights	Rotary rheostat or stepping switch	Side Console or Dash left wing	Provides adjustment for light intensity in night run position	
Interior lights	Three-position switch	Side console	Selects mode of passenger compartment lighting: off, on, normal	
Fast idle	Two-position switch	Side console	Selects high idle speed of engine	
WC ramp/ kneel enable	Two-position switch[1]	Side console or Dash right wing	Permits operation of ramp and kneel operations at each door remote panel	Amber light
Front door ramp/kneel enable	Two-position keyed switch[1]	Front door remote or Dash right wing	Permits ramp and kneel activation from front door area, key required[1]	Amber light
Front door ramp	Three-position momentary switch	Right side of steering wheel	Permits deploy and stow of front ramp	Red light
Front kneel	Three-position momentary switch	Front door remote	Permits kneeling activation and raise and normal at front door remote location	Amber or red dash indicator. Ext alarm and Amber light

TABLE 5
Transit Bus Instruments and Alarms

Device	Description	Location	Function	Visual/ Audible
Rear door ramp/kneel enable	Two-position keyed switch[1]	Rear door remote	Permits ramp and kneel activation from rear door area, key required[1]	Red light
Rear door ramp	Three-position momentary switch	Rear door remote	Permits deploy and stow of rear ramp	
Rear kneel	Three-position momentary switch	Rear door remote	Permits kneeling activation and raise and normal at rear door remote location	
Silent alarm	Recessed push button, NO and NC contacts momentary	Side console	Activates emergency radio alarm at dispatch and permits covert microphone and/or enables destination sign emergency message	
Video system event switch	Momentary on/off momentary switch with plastic guard	Side console	Triggers event equipment, triggers event light on dash	Amber light
Left remote mirror	Four-position toggle type	Side console	Permits two-axis adjustment of left exterior mirror	
Right remote mirror	Four-position toggle type	Side console	Permits two-axis adjustment of right exterior mirror	
Mirror heater	Switch or temperature activated	Side console	Permits heating of outside mirrors when required	
Passenger door control	Five-position handle type detent or two momentary push buttons	Side console, forward	Permits open/close control of front and rear passenger doors	Red light
Rear door override	Two-position switch in approved location	Side console, forward	Allows driver to override activation of rear door passenger tape switches	
Engine shutdown override	Momentary switch with operation protection	Side console	Permits driver to override auto engine shutdown	
Hazard flashers	Two-position switch	Side console or Dash right wing	Activates emergency flashers	Two green lights
Fire suppression	Red push button with protective cover	Dash left wing or dash center	Permits driver to override and manually discharge fire suppression system	Red light
Mobile data terminal	Mobile data terminal coach operator interface panel	Above right dash wing	Facilitates driver interaction with communication system and master log-on	LCD display with visual status and text messages
Farebox interface	Farebox coach operator interface panel	Near farebox	Facilitates driver interaction with farebox system	LCD display
Destination sign interface	Destination sign interface panel	in approved location	Facilitates driver interaction with destination sign system, manual entry	LCD display

TABLE 5
Transit Bus Instruments and Alarms

Device	Description	Location	Function	Visual/ Audible
Turn signals	Momentary push button (two required) raised from other switches	Left foot panel	Activates left and right turn signals	Two green lights and optional audible indicator
PA manual	Momentary push button	In approved location	Permits driver to manually activate public address microphone	
Low profile microphone	Low-profile discrete Mounting	Steering column	Permits driver to make announcements with both hands on the wheel and focusing on road conditions	
High beam	Detented push button	In approved location	Permits driver to toggle between low and high beam	Blue light
Parking brake	Pneumatic PPV	Side console or Dash left wing	Permits driver to apply and release parking brake	Red light
Park brake release	Pneumatic PPV	Vertical side of the side console or dash center	Permits driver to push and hold to release brakes	
Hill holder	Two-position momentary switch	Side console	Applies brakes to prevent bus from rolling	
Remote engine speed	Rotary rheostat	Engine compartment	Permits technician to raise and lower engine RPM from engine compartment	
Master door/ interlock	Multi-pole toggle, detented	Out of operator's reach	Permits driver override to disable door and brake/throttle interlock	Red light
Warning interlocks deactivated	Red indicator light	Dash panel center	Illuminates to warn drive that interlocks have been deactivated.	Red light
Retarder disable	Multi-pole switch detented	Within reach of Operator or approved location	Permits driver override to disable brake retardation/regeneration	Red light
Alarm acknowledg e	Push button momentary	Approved location	Permits driver to acknowledge alarm condition	
Rear door passenger sensor disable	Multi-pole toggle, detented	In sign compartment or Driver's barrier compartment	Permits driver to override rear door passenger sensing system	
Indicator/ alarm test button	Momentary switch or programming[1]	Dash center panel	Permits driver to activate test of sentry, indicators and audible alarms	All visuals and audibles
Auxiliary power	110-volt power receptacle	Approved location	Property to specify what function to supply	

TABLE 5
Transit Bus Instruments and Alarms

Device	Description	Location	Function	Visual/ Audible
Speedometer	Speedometer, odometer, and diagnostic capability, 5-mile increments	Dash center panel	Visual indication of speed and distance traveled, accumulated vehicle mileage, fault condition display	Visual
Air pressure gauge	Primary and secondary, 5 psi increments	Dash center panel	Visual indication of primary and secondary air systems	Red light and buzzer
Fire detection	Coach operator display	Property specific or dash center	Indication of fire detection activation by zone/location	Buzzer and red light
Door obstruction	Sensing of door obstruction	Dash center	Indication of rear door sensitive edge activation	Red light and buzzer
Door ajar	Door not properly closed	Property specific or dash center	Indication of rear door not properly closed	Buzzer or alarm and red light
Low system air pressure	Sensing low primary and secondary air tank pressure	Dash center	Indication of low air system pressure	Buzzer and red light
Methane detection function	Detection of system integrity	Property specific or dash center	Detects system failure	No start condition, amber light
Methane detection	Indication of 20% LED emergency light (LEL)	Property specific or dash center	Detects levels of methane	Flashing red at 20% LEL
Methane detection	Indication of 50% LEL	Property specific or dash center	Detects levels of methane	Solid red at 50% LEL
Engine coolant indicator	Low coolant indicator may be supplied as audible alert and visual and/or text message	Within driver's sight	Detects low coolant condition	Amber light
Hot engine indicator	Coolant temperature indicator may be supplied as audible alert and visual and/or text message	Within driver's sight	Detects hot engine condition and initiates time delay shutdown	Red light
Low engine oil pressure indicator	Engine oil pressure indicator may be supplied as audible alert and visual and/or text message	Within driver's sight	Detects low engine oil pressure condition and initiates time-delayed shutdown	Red light
ABS indicator	Detects system status	Dash center	Displays system failure	Amber light
HVAC indicator	Detects system status	Dash center	Displays system failure	Amber or red light
Charging system indicator (12/24 V)	Detect charging system status	Dash center	Detects no charge condition and optionally detects battery high, low, imbalance, no charge condition, and initiates time-delayed shutdown	Red light flashing or solid based on condition
Bike rack deployed indicator	Detects bike rack position	Dash center	Indication of bike rack not being in fully stowed position	Amber or red light
Fuel tank level	Analog gauge, graduated based on fuel type	Dash center	Indication of fuel tank level/pressure	

TABLE 5
Transit Bus Instruments and Alarms

Device	Description	Location	Function	Visual/ Audible
DEF gauge	Level Indicator	Center dash	Displays level of DEF tank and indicates with warning light when low	Red light
Active regeneration	Detects Status	Dash center	Indication of electric regeneration	Amber or red light
Turntable	Detects Status	Dash Center	Warning indication for hinge locking	Audible and amber warning and red light if locked
Turntable	Interlock momentary switch	Side console	Momentarily release interlock brakes due to overangled condition	

1. Indicate area by drawing. Break up switches control from indicator lights.

3.40.6 Driver Foot Controls

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

Pedal Angle
The vertical angle of the accelerator and brake pedals shall be determined from a horizontal plane regardless of the slope of the cab floor. The accelerator and brake pedals shall be positioned at an angle of 37 to 50 degrees at the point of initiation of contact and extend downward to an angle of 10 to 18 degrees at full throttle.

The location of the brake and accelerator pedals shall be determined by the manufacturer, based on space needs, visibility, lower edge of windshield, and vertical H-point.

Pedal Dimensions and Position
The floor-mounted accelerator pedal shall be 10 to 12 in. long and 3 to 4 in. wide. Clearance around the pedal must allow for no interference precluding operation.

1 to 2 in. Between Brake and Accelerator Pedals
The accelerator and brake pedals shall be positioned such that the spacing between them, measured at the heel of the pedals, is between 1 and 2 in. Both pedals should be located approximately on the same plane coincident to the surface of the pedals.

3.40.7 Brake and Accelerator Pedals

Brake Pedal
Non-adjustable brake pedal.

3.40.8 Driver Foot Switches

Floor-Mounted Foot Control Platform

The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at a minimum of 10 degrees and a maximum of 37 degrees. It shall be located no closer to the seat front than the heel point of the accelerator pedal.

Turn Signal Controls
Turn signal controls shall be floor-mounted, foot-controlled, water-resistant, heavy-duty, momentary contact switches.

Foot Switch Control
The control switches for the turn signals shall be mounted on an inclined, floor-mounted stainless steel enclosure or metal plate mounted to an incline integrated into the driver's platform, located to the left of the steering column. The location and design of this enclosure shall be such that foot room for the operator is not impeded. The inclined mounting surface shall be skid-resistant. All other signals, including high beam and public address system shall be in approved location.

The foot switches shall be UL-listed, heavy-duty type, of a rugged, corrosion-resistant metal construction. The foot switches for the directionals shall be momentary type, while those for the PA system and the high beam shall be latching type. The spacing of the switches shall be such that inadvertent simultaneous deflection of switches is prevented.

Other Floor-Mounted Controls
PA System

3.41 Driver Amenities

3.41.1 Coat Hanger

A suitable hanger shall be installed in a convenient, approved location for the driver's coat.

3.41.2 Drink Holder

No drink holder.

3.41.3 Storage Box

An enclosed driver storage area shall be provided with a positive latching door and/or lock. The minimum size is 2750 cubic in.

3.42 Windshield Wipers and Washers

3.42.1 Windshield Wipers

The bus shall be equipped with a windshield wiper for each half of the windshield. At 60 mph, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift. For two-

piece windshields, both wipers shall park along the center edges of the windshield glass. For single-piece windshields, wipers shall park along the bottom edge of the windshield. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service. The fastener that secures the wiper arm to the drive mechanism shall be corrosion-resistant.

Single-control, electric two-speed intermittent wiper.

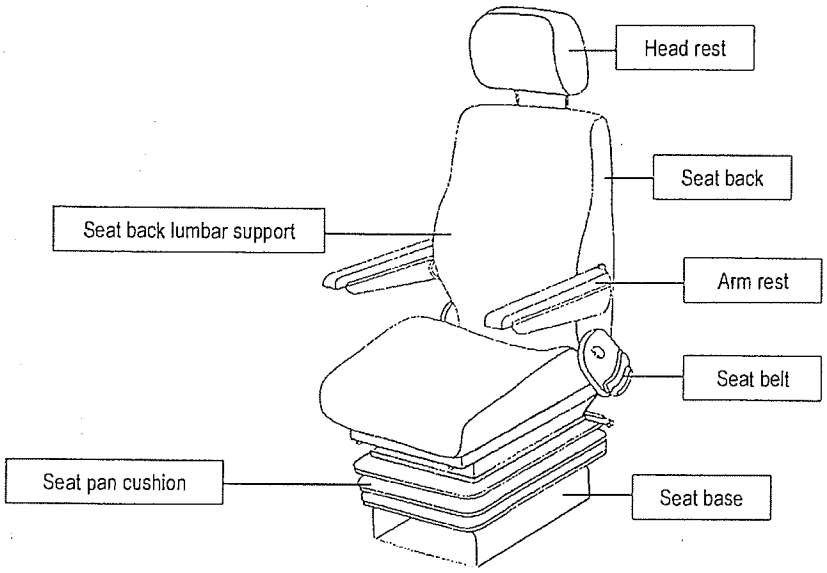
3.42.2 Windshield Washers

The windshield washer system, when used with the wipers, shall deposit washing fluid evenly and completely wet the entire wiped area.

The windshield washer system shall have a minimum 3-gallon reservoir, located for easy refilling from outside of the bus. Reservoir pumps, lines and fittings shall be corrosion-resistant and must include a means to determine fluid level.

3.43 Driver's Seat

FIGURE 6
Driver's Seat



3.43.1 Dimensions

The driver's seat shall be comfortable and adjustable so that people ranging in size from a 95th-percentile male to a 5th-percentile female may operate the bus.

Seat Pan Cushion Length

Measurement shall be from the front edge of the seat pan to the rear at its intersection with the seat back. The adjustment of the seat pan length shall be no less than 16.5 in. at its minimum length and no more than 20.5 in. at its maximum length.

Seat Pan Cushion Height
Dimensions
Measurement shall be from the cab floor to the top of the level seat at its center midpoint. The seat shall adjust in height from a minimum of 14 in., with a minimum 6 in. vertical range of adjustment.

Seat Pan Cushion Slope
Measurement is the slope of the plane created by connecting the two high points of the seat, one at the rear of the seat at its intersection with the seat back and the other at the front of the seat just before it waterfalls downward at the edge. The slope can be measured using an inclinometer and shall be stated in degrees of incline relative to the horizontal plane (0 degrees). The seat pan shall adjust in its slope from no less than plus 12 degrees (rearward "bucket seat" incline), to no less than minus 5 degrees (forward slope).

Seat Base Fore/Aft Adjustment
Measurement is the horizontal distance from the heel point to the front edge of the seat. The minimum and maximum distances shall be measured from the front edge of the seat when it is adjusted to its minimum seat pan depth (approximately 15 in.). On all low-floor buses, the seat-base shall travel horizontally a minimum of 9 in. It shall adjust no closer to the heel point than 6 in. On all high-floor buses, the seat base shall travel a minimum of 9 in. and adjust no closer to the heel-point than 6 in.

Seat Pan Cushion Width
Measurement is the horizontal distance across the seat cushion. The seat pan cushion shall be 17 to 21 in. across at the front edge of the seat cushion and 20 to 23 in. across at the side bolsters.

Seat Suspension
The driver's seat shall be appropriately dampened to support a minimum weight of 380 lbs. The suspension shall be capable of dampening adjustment in both directions.

Rubber snubbers shall be provided to prevent metal-to-metal contact.

Seat Back Width
Measurement is the distance between the outermost points of the front of the seat back, at or near its midpoint in height. The seat back width shall be no less than 19 in. Seat back will include dual recliner gears on both sides of the seat.

Seat Back Height
Standard height seat back.

Headrests
Adjustable headrest.

Seat Back Lumbar Support
Measurement is from the bottom of the seat back at its intersection with the seat pan to the top of the lumbar cushioning. The seat back shall provide adjustable depth lumbar back support with three individual operating lumbar cells within a minimum range of 7 to 11 in.

Seat Back Angle Adjustment
The seat back angle shall be measured relative to a level seat pan, where 90 degrees is the upright position and 90 degrees-plus represents the amount of recline.

The seat back shall adjust in angle from a minimum of no more than 90 degrees (upright) to at least 105 degrees (reclined), with infinite adjustment in between.

3.43.2 Seat Belt

The belt assembly should be an auto-locking retractor (ALR). All seat belts should be stored in automatic retractors. The belts shall be mounted to the seat frame so that the driver may adjust the seat without resetting the seat belt.

The seat and seat belt assemblies as installed in the bus shall withstand static horizontal forces as required in FMVSS 207 and 210.

Lap and Shoulder (Three-Point) Seat Belt
Seat belts shall be provided across the driver's lap and diagonally across the driver's chest. The driver shall be able to use both belts by connecting a single buckle on the right side of the seat cushion. 3-pt seatbelts must be emergency locking retractor (ELR) in design.

Lap Belt Length
72 in. with Extension
The lap belt assembly shall be 72 in. in length with an 8-in. extension.

3.43.3 Adjustable Armrest

No armrests.

3.43.4 Seat Control Locations

While seated, the driver shall be able to make seat adjustments by hand without complexity, excessive effort or being pinched. Adjustment mechanisms shall hold the adjustments and shall not be subject to inadvertent changes.

3.43.5 Seat Structure and Materials

Cushions
Cushions shall be fully padded with at least 3 in. of materials in the seating areas at the bottom and back.

Foam and fabrics shall meet FTA Docket 90A.

3.43.6 Pedestal

Powder-coated steel.

3.43.7 Seat Options

Leather/vinyl replaceable cover/cushions.

3.43.8 Mirrors

Exterior Mirrors
The bus shall be equipped with a corrosion-resistant, outside rearview mirrors mounted with stable supports to minimize vibration. Mirrors shall be firmly attached to the bus to minimize vibration and to prevent loss of adjustment with a breakaway mounting system. Mirrors shall permit the driver to view the roadway along the sides of the bus, including the rear wheels. Mirrors should be positioned to prevent blind spots.

Mirrors shall retract or fold sufficiently to allow bus washing operations but avoid contact with windshield.

Flat Mirrors on Both Sides
The bus shall be equipped with two flat outside mirrors, each with not less than 50 sq in. of reflective surface. The mirrors shall be located so as to provide the driver a view to the rear along both sides of the bus and shall be adjustable both in the horizontal and vertical directions to view the rearward scene. The roadside rearview mirror shall be positioned so that the driver's line of sight is not obstructed.

Combination of flat and convex mirrors referred to as transit-specific.

Curbside Mirrors
The curbside rearview mirror shall be mounted so that its lower edge is no less than 76 in. above the street surface. A lower mount may be required due to requested mirror configuration requests.

Heated and Remote Mirrors
The heaters shall be energized whenever the driver's heater and/or defroster is activated or activated independently.

Heated Street-Side Mirrors
The street-side mirrors shall have heaters that energize whenever the driver's heater and/or defroster is activated, or can be activated independently.

Interior Mirrors

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

3.44 Windows – General

For 30-foot length – A minimum of 6000 sq.in. of window area, including operator and door windows, shall be required on each side of the standard configuration bus.

For 35-foot length – A minimum of 8000 sq.in. of window area, including operator and door windows, shall be required on each side of the standard configuration bus.

For 40-foot length – A minimum of 10,000 sq. in. of window area, including operator and door windows, shall be required on each side of the standard configuration bus.

3.45 Windshield

The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 14 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3½ ft high no more than 2 ft in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight. Any binocular obscuration due to a center divider may be ignored when determining the 90-degree requirement, provided that the divider does not exceed a 3-degree angle in the operator's field of view. Windshield pillars shall not exceed 10 degrees of binocular obscuration. The windshield shall be designed and installed to minimize external glare as well as reflections from inside the bus.

The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshields shall not be used. Winglets may be bonded.

3.46.1 Glazing

The windshield glazing material shall have a ¼ in. nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673.

Shaded Band
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 5 percent when tested in accordance to ASTM D-1003.

Two-piece windshield.

3.46 Driver's Side Window

The driver's side window shall be the sliding type, requiring only the rear half of sash to latch upon closing, and shall open sufficiently to permit the seated operator to easily adjust the street-side outside rearview mirror. When in an open position, the window shall not rattle or close during braking. This window section shall slide in tracks or channels designed to last the service life of the bus. The operator's side window shall not be bonded in place and shall be easily replaceable. The glazing material shall have a single-density tint.

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

The driver's side window glazing material shall have a ¼ in. nominal thickness laminated safety glass conforming with the requirements of ANSI Z26.1-1996 Test Grouping 2 and the Recommended Practices defined in SAE J673.

The design shall prevent sections from freezing closed in the winter. Light transmittance shall be 75 percent on the glass area below 53 in. from the operator platform floor. On the top fixed over bottom slider configuration, the top fixed area above 53 in. may have a maximum 5 percent light transmittance.

Standard Driver's Side Window, Traditional Frame
Full slider

Quick Change Operator's Side Window
Glazing in the window assembly shall be replaced without removing the window from its installed position on the bus or manipulation of the rubber molding surrounding the glazing. The glazing shall be held in place mechanically by a formed metal extruded ring constructed to last the life of the vehicle.

3.47 Side Windows

3.47.1 Configuration

Side windows shall not be bonded in place, but shall be easily replaceable without disturbing adjacent windows and shall be mounted so that flexing or vibration from engine operation or normal road excitation is not apparent. All aluminum and steel material will be treated to prevent corrosion.

3.47.2 Emergency Exit (Egress) Configuration

Minimum Egress
All side windows shall be fixed in position, except as necessary to meet the emergency escape requirements.

Standard Passenger Side Window Configurations
Openable windows with inward-opening transom panels.

Traditional Frame
Openable windows with inward-opening transom panels.

3.47.3 Configuration

Operable Windows with Inward-Opening Transom Panels (Fixed Bottom, Tip-In Top)
Each operable side window shall incorporate an upper transom portion. The transom shall be between 25 and 35 percent of the total window area. The lower portion of the window shall be fixed. The transom portion shall be hinged along the lower edge and open inward.

3.47.4 Materials

Safety Glass Glazing Panels
Side windows glazing material shall have a minimum of 3/16 in. nominal thickness tempered safety glass. The material shall conform to the requirements of ANSI Z26.1-1996 Test Grouping 2 and the Recommended Practices defined in SAE J673.

Windows on the bus sides and in the rear door shall be tinted a neutral color, complementary to the bus exterior. The maximum solar energy transmittance shall not exceed 37 percent, as measured by ASTM E-424. Luminous transmittance shall be measured by ASTM D-1003. Windows over the destination signs shall not be tinted.

Light
55 percent luminous transmittance.

Safety Glass Glazing Panels
Side windows glazing material shall have a minimum of 3/16 in. nominal thickness tempered safety glass. The material shall conform to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.

3.47.5 Rear Window

No requirement for the rear window.

3.48 Heating, Ventilating and Air Conditioning – Capacity and Performance

The HVAC climate control system shall be capable of controlling the temperature and maintaining the humidity levels of the interior of the bus as defined in the following paragraphs.

Require Rear-Mounted HVAC Unit
The HVAC unit shall be rear-mounted.

Alternative for Hybrid Buses
Fully AC high-voltage electric-driven A/C system with full hermetic AC compressor, condenser fan and evaporator blower motors.

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

When the bus is operated in outside ambient temperatures of 95 to 115 °F, the interior temperature of the bus shall be permitted to rise 0.5° for each degree of exterior temperature in excess of 95 °F.

When bus is operated in outside ambient temperatures in the range of -10 to 10 °F, the interior temperature of the bus shall not fall below 55 °F while the bus is running on the design operating profile.

System capacity testing, including pull-down/warm-up, stabilization and profile, shall be conducted in accordance to the APTA's "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System."

The recommended locations of temperature probes are only guidelines and may require slight modifications to address actual bus design. Care must be taken to avoid placement of sensing devices in the immediate path of an air duct outlet. In general, the locations are intended to accurately represent the interior passenger area.

Additional testing shall be performed as necessary to ensure compliance to performance requirements stated herein.

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

R134a
The air conditioning system shall meet these performance requirements using R134a.

3.49 Controls and Temperature Uniformity

The HVAC system excluding the driver's heater/defroster shall be centrally controlled with an advanced electronic/diagnostic control system with provisions for extracting/reading data. The system shall be compliant with J1939 Communication Protocol for receiving and broadcasting of data.

Hot engine coolant water shall be delivered to the HVAC system driver's defroster/heater and other heater cores by means of an auxiliary coolant pump, sized for the required flow, which is brushless and sealless having a minimum maintenance free service life for both the brushless motor and the pump of at least 40,000 hours at full power.

Fully Automatic Climate Control System
The climate control system shall be fully automatic and control the interior average temperature to within ±2 °F of specified temperature control set-point.

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

3.50 Air Flow

3.50.1 Passenger Area

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

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

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

No "Fresh Air" Requirements

3.50.2 Driver's Area

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

3.50.3 Controls for the Climate Control System (CCS)

The controls for the driver's compartment for heating, ventilation and cooling systems shall be integrated and shall meet the following requirements:

- The heat/defrost system fan shall be controlled by a separate switch that has an "off" position and at least two positions for speed control. All switches and controls shall preclude the possibility of clothing becoming entangled, and shields shall be provided, if required. If the fans are approved by the Agency, an "on-off" switch shall be located to the right of or near the main defroster switch.
- A manually operated control valve shall control the coolant flow through the heater core.

If a cable-operated manual control valve is used, the cable length shall be kept to a minimum to reduce cable seizing. Heater water control valves shall be "positive" type, closed or open. The method of operating remote valves shall require the concurrence of the Agency project manager.

3.50.4 Driver's Compartment Requirements

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

- The heater and defroster system shall provide heating for the driver and heated air to completely defrost and defog the windshield, driver's side window, and the front door glasses in all operating conditions. Fan(s) shall be able to draw air from the bus body interior and/or the exterior through a control device and pass it through the heater core to the defroster system and over the driver's feet. A minimum capacity of 100 cfm shall be provided. The driver shall have complete control of the heat and fresh airflow for the driver's area.
- The defroster supply outlets shall be located at the lower edge of the windshield. These outlets shall be durable and shall be free of sharp edges that can catch clothes during normal daily cleaning. The system shall be such that foreign objects such as coins or tickets cannot fall into the defroster air outlets. Adjustable ball vents or louvers shall be provided at the left of the driver's position to allow direction of air onto the side windows.

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

3.50.5 Driver's Cooling

A separate fan unit shall provide 100 cfm of air to the driver's area through directionally adjustable nozzles and an infinitely variable fan control, both of which shall be located above and ahead of the driver.

Driver's booster blower.

3.51 Air Filtration

Air shall be filtered before discharge into the passenger compartment. The filter shall meet the ANSI/ASHRAE 52.1 requirement for 5 percent or better atmospheric dust spot efficiency, 50 percent weight arrestance, and a minimum dust holding capacity of 120 g per 1000 cfm cell. Air filters shall be easily removable for service.

Disposable Type Filters
Air filters shall be of a disposable type.

3.52 Roof Ventilators

One ventilator shall be provided in the roof of the bus. The ventilator shall be easily opened and closed manually. When open with the bus in motion, this ventilator shall provide fresh air inside the bus. The ventilator shall cover an opening area no less than 425 sq in. and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4 in., or with all four edges raised simultaneously to a height of no less than 3½ in. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed.

3.53 Maintainability

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

3.54 Entrance/Exit Area Heating

No requirements for entrance/exit area heating.

3.55 Floor-Level Heating

No requirements for floor-level heating.

Also provide pricing for this alternate option:
Entrance/Exit Area Heating
Heat shall be supplied to the entrance and exit areas to maintain a tread surface temperature no less than 35 °F in an ambient of -10 °F to prevent accumulation of snow, ice or slush with the bus operating under design operating profile and corresponding door opening cycle.

3.56 Exterior Panels, Finishes and Exterior Lighting – Design

The bus shall have a clean, smooth, simple design, primarily derived from bus performance requirements and passenger service criteria. The exterior and body features, including grilles and louvers, shall be shaped to facilitate cleaning by automatic bus washers without snagging washer brushes. Water and dirt shall not be retained in or on any body feature to freeze or bleed out onto the bus after leaving the washer. The body and windows shall be sealed to prevent leaking of air, dust or water under normal operating conditions and during cleaning in automatic bus washers for the service life of the bus.

Exterior panels shall be sufficiently stiff to minimize vibration, drumming or flexing while the bus is in service. When panels are lapped, the upper and forward panels shall act as a watershed. However, if entry of moisture into the interior of the vehicle is prevented by other means, then rear cap panels may be lapped otherwise. The windows, hatches and doors shall be able to be sealed. Accumulation of spray and splash generated by the bus's wheels shall be minimized on windows and mirrors.

3.56.1 Materials

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

3.56.2 Roof-Mounted Equipment
A non-skid, clearly marked walkway or steps shall be incorporated on the roof to provide access to equipment without damaging any system or bus paneling.

3.57 Pedestrian Safety

Exterior protrusions along the side and front of the bus greater than ½ in. and within 80 in. of the ground shall have a radius no less than the amount of the protrusion. The exterior rearview mirrors, cameras and required lights and reflectors are exempt from the protrusion requirement. Advertising frames shall protrude no more than ⅞ in. from the body surface. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize toeholds or handholds.

Exterior protrusions shall not cause a line-of-sight blockage for the driver.

3.58 Repair and Replacement

3.58.1 Side Body Panels

Structural elements supporting exterior body panels shall allow side body panels below the windows to be repaired in lengths not greater than 12.5 ft.

Easily Replaceable Quick Change Side Body Panels
Easily replaceable full-height side body panels between the window and floor shall be easily and quickly replaceable in sections.

3.59 Rain Gutters

Rain gutters shall be provided to prevent water flowing from the roof onto the passenger doors and driver's side window. When the bus is decelerated, the gutters shall not drain onto the windshield, driver's side window or door boarding area. Cross-sections of the gutters shall be adequate for proper operation.

3.60 License Plate Provisions

Provisions shall be made to mount standard-size U.S./Canada license plates per SAE J686 on the front and rear of the bus. These provisions shall direct-mount or recess the license plates so that they can be cleaned by automatic bus-washing equipment without being caught by the brushes. The rear license plate provision shall be illuminated per SAE J587.

No front plate or holder is required. Rear-mount with light.

3.60.1 Rub Rails

No requirement for rub rails.

3.61 Fender Skirts

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

3.62 Wheel Covers

Wheel covers not required.

3.62.1 Splash Aprons

Full width rear splash apron.

3.63 Service Compartments and Access Doors

3.63.1 Access Doors

Conventional or pantograph hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments including doors for checking the quantity and adding to the engine coolant, engine lubricant and transmission fluid. Access openings shall be sized for easy performance of tasks within the compartment, including tool operating space. Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the bus. They shall close flush with the body surface. All doors shall be hinged at the top or on the forward edge and shall be prevented from coming loose or opening during transit service or in bus washing operations. All access doors shall be retained in the open position by props or counterbalancing with over-center or gas-filled springs with safety props and shall be easily operable by one person. Springs and hinges shall be corrosion resistant. Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for opening. Access doors, when opened, shall not restrict access for servicing other components or systems.

If precluded by design, the manufacturer shall provide door design information specifying how the requirements are met.

3.63.2 Access Door Latch/Locks

Access doors larger than 100 sq in. in area shall be equipped with corrosion-resistant flush-mounted latches or locks except for coolant and fuel fill access doors. All such access doors that require a tool to open shall be standardized throughout the vehicle and will require a nominal 5/16 in. square male tool to open or lock.

3.64 Bumpers

3.64.1 Location

Bumpers shall provide impact protection for the front and rear of the bus with the top of the bumper being 27 in., ± 2 in., above the ground. Bumper height shall be such that when one bus is parked behind another, a portion of the bumper faces will contact each other.

3.64.2 Front Bumper

No part of the bus, including the bumper, shall be damaged as a result of a 5 mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus's longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact. The bumper shall protect the bus from damage as a result of 6.5 mph impacts at any point by the common carriage with contoured impact surface defined in Figure 2 of FMVSS 301 loaded to 4000 lbs parallel to the longitudinal centerline of the bus. It shall protect the bus from damage as a result of 5.5 mph impacts into the corners at a 30-degree angle to the longitudinal centerline of the bus. The energy absorption system of the bumper shall be independent of every power system of the bus and shall not require service or maintenance in normal operation during the service life of the bus. The bumper may increase the overall bus length specified by no more than 7 in.

Mounting provisions for integrated bike rack, to be installed.

3.64.3 Rear Bumper

No part of the bus, including the bumper, shall be damaged as a result of a 2 mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus. The bumper shall return to its pre-impact shape within 10 minutes of the impact. When using a yard tug with a smooth, flat plate bumper 2 ft wide contacting the horizontal centerline of the rear bumper, the bumper shall provide protection at speeds up to 5 mph, over pavement discontinuities up to 1 in. high, and at accelerations up to 2 mph/sec. The rear bumper shall protect the bus, when impacted anywhere along its width by the common carriage with contoured impact surface defined in Figure 2 of FMVSS 301 loaded to 4000 lbs, at 4 mph parallel to or up to a 30-degree angle to, the longitudinal centerline of the bus. The rear bumper shall be shaped to preclude unauthorized riders standing on the bumper. The bumper shall not require service or maintenance in normal operation during the service life of the bus. The bumper may increase the overall bus length specified by no more than 7 in.

3.64.4 Bumper Material

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

3.65 Finish and Color

3.65.1 Appearance

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system Supplier prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the bus. Drilled holes and cutouts in exterior surfaces shall be made prior to cleaning, priming and painting, where possible, to prevent corrosion. The bus shall be completely painted prior to installation of exterior lights, windows, mirrors and other items that

are applied to the exterior of the bus. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels.

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

- blisters or bubbles appearing in the topcoat film
- chips, scratches, or gouges of the surface finish
- cracks in the paint film
- craters where paint failed to cover due to surface contamination
- overspray
- peeling
- runs or sags from excessive flow and failure to adhere uniformly to the surface
- chemical stains and water spots
- dry patch due to incorrect mixing of paint activators
- buffing swirls

All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals.

Proper adhesion between the basic surface and successive coats of the original paint shall be measured using an Elcometer adhesion tester as outlined in ASTM D4541-85. Adhesion shall be a minimum 300 ft-lbs. The bus manufacturer shall supply test samples of the exterior surface for each step of the painting process that may be subject to adhesion testing per ASTM G4541-87 and ASTM D4145-85. ASTM D4541-93 may be used for inspection testing during assembly of the vehicle.

Standard Contractor exterior paint finish quality. The color scheme is to be approved by Lextran.

Standard OEM exterior paint system.

3.66 Decals, Numbering and Signing

Monograms, numbers and other special signing shall be applied to the inside and outside of the bus as required. Signs shall be durable and fade-, chip- and peel-resistant. They may be painted signs, decals or pressure-sensitive appliqués. All decals shall be installed per the decal Supplier recommendations. Signs shall be provided in compliance with the ADA requirements defined in 49 CFR Part, Subpart B, 38.27.

3.66.1 Passenger Information

ADA priority seating signs as required and defined by 49 CFR, Part 38.27 shall be provided to identify the seats designated for passengers with disabilities.

Requirements for a public information system in accordance with 49 CFR, Part 38.35 shall be provided.

3.67 Exterior Lighting

Exterior lighting and reflectors shall comply, as applicable, with Part 393, Subpart B of the FMCSA and FMVSS 108.

All exterior lights shall be designed to prevent entry and accumulation of moisture or dust. Commercially available LED-type lamps shall be utilized at all exterior lamp locations except headlights. Lamps, lenses and fixtures shall be interchangeable to the extent practicable. Two hazard lamps at the rear of the bus shall be visible from behind when the engine service doors are opened. Light lenses shall be designed and located to prevent damage when running the vehicle through an automatic bus washer. Front marker (clearance) lights along with lights located on the roof and sides of the bus shall have protective shields or be of the flush mount type to protect the lens against minor impacts.

Standard Lamps
All LED lamps shall be standard installation of the OEM. The entire assembly shall be specifically coated to protect the light from chemical and abrasion degradation.

3.67.1 Backup Light/Alarm

Visible and audible warnings 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.

3.67.2 Doorway Lighting

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 ft 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.

3.67.3 Turn Signals

Wraparound Front Turn Signals
Front turn signals shall be of wrap-around design or shall be designed to be visible from the front and the near side of the bus. They shall include an option for an audible alarm that the bus is turning.

3.67.4 Headlights

Roved headlamps shall be designed for replacement without removing the headlamp bezel.

Daytime Running Lights
Headlamps shall incorporate a daytime running light feature.

3.67.5 Brake Lights

Brake lights shall be provided in accordance with FMVSS 108 and Part 393, Subpart B of the FMCSA as applicable.

High and Center Mount Red Brake Lamp
Bus shall include red, high and center mount brake lamp(s) along the backside of the bus in addition to the lower brake lamps required under FMVSS 108. The high and center mount brake lamp(s) shall illuminate steady with brake application.

3.67.6 Service Area Lighting (Interior and Exterior)

LED lamps shall be provided in the engine and all other compartments where service may be required to generally illuminate the area for night emergency repairs or adjustments. These service areas shall include, but not be limited to, the engine compartment, the communication box, junction/apparatus panels and passenger door operator compartments. Lighting shall be adequate to light the space of the service areas to levels needed to complete typical emergency repairs and adjustments. The service area lamps shall be suitable for the environment in which they are mounted.

Engine compartment lamps shall be controlled by a switch mounted near the rear start controls. All other service area lamps shall be controlled by switches mounted on or convenient to the lamp assemblies. Power to the service area lighting shall be programmable. Power shall latch on with activation of the switch and shall be automatically discontinued (timed out) after 30 minutes to prevent damage caused by inadvertently leaving the service area lighting switch in the on position after repairs are made.

3.68 Interior Panels and Finishes – General Requirements

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

Interior surfaces more than 10 in. below the lower edge of the side windows or windshield shall be shaped so that objects placed on them fall to the floor when the coach is parked on a level surface. Any components and other electrical components within close proximity to these surfaces shall also be resistant to this cleaning method.

Requirements for additional anti-graffiti/vandalism treatments for interior surfaces.

3.69 Interior Panels

Panels shall be easily replaceable and tamper-resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of transit bus service. Individual trim panels and parts shall be interchangeable to the extent practicable.

Materials shall comply with the Recommended Fire Safety Practices defined in FTA docket 90-A, dated October 20, 1993.

3.69.1 Driver Area Barrier

A barrier or bulkhead between the driver and the street-side front passenger seat shall be provided. The barrier shall minimize glare and reflections in the windshield directly in front of the barrier from interior lighting during night operation. Location and shape must permit full seat travel and reclining possibilities that can accommodate the shoulders of a 95th-percentile male. The partition shall have a side return and stanchion to prevent passenger from reaching the driver by standing behind the driver's seat. The lower area between the seat and panel must be accessible to the driver. The partition must be strong enough in conjunction with entire partition assembly for mounting of such equipment as flare kits, fire extinguishers (1.2 kg), microcomputer, public address amplifier, etc. Dark or black panels are preferred behind the driver's head. The panel should be isolated for noise control and attached with rubber grommets.

Full-Height (Floor-to-Ceiling) Configuration of Driver's Barrier
The driver's barrier shall extend continually from the floor area to the ceiling and from the bus wall to the first stanchion immediately behind the driver to provide security to the driver and limit passenger conversation.

3.69.2 Modesty Panels

Sturdy divider panels constructed of durable, unpainted, corrosion-resistant material complementing the interior shall be provided to act as both a physical and visual barrier for seated passengers.

Design and installation of modesty panels located in front of forward-facing seats shall include a handhold or grab handle along its top edge. These dividers shall be mounted on the sidewall and shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats. Modesty panels shall extend from at least the window opening of the side windows, and those forward of transverse seats shall extend downward to 1 and 1½ in. above the floor. Panels forward of longitudinal seats shall extend to below the level of the seat cushion. Dividers positioned at the doorways shall provide no less than a 2½ in. clearance between the modesty panel and a fully open, inward opening door, or the path of a deploying flip-out ramp to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails if passengers assist are not provided by other means.

The modesty panel and its mounting shall withstand a static force of 250 lbs applied to a 4 × 4 in. area in the center of the panel without permanent visible deformation.

Clear non-glass panel from above the modesty panel to the top of the daylight opening and attached to the stanchion.

3.69.3 Front End

The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the driver's feet from kicking or fouling wiring and other equipment. The front end shall be free of protrusions that are hazardous to passengers standing at the front of the standee line area of the bus during rapid decelerations. Paneling across the front of the bus and any trim around the driver's compartment shall be formed metal or composite material. Composite dash panels shall be reinforced as necessary, vandal-resistant and replaceable. All colored, painted and plated parts forward of the driver's barrier shall be finished with a surface that reduces glare. Any mounted equipment must have provision to support the weight of equipment.

3.69.4 Rear Bulkhead

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

The rear bulkhead paneling shall be contoured to fit the ceiling, side walls and seat backs so that any litter or trash will tend to fall to the floor or seating surface when the bus is on a level surface. Any air vents in this area shall be louvered to reduce airflow noise and to reduce the probability of trash or liter being thrown or drawn through the grille. If it is necessary to remove the panel to service components located on the rear bulkhead, the panel shall be hinged or shall be able to be easily removed and replaced. Grilles where access to or adjustment of equipment is required shall be heavy-duty and designed to minimize damage and limit unauthorized access.

3.69.5 Headlining

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

3.69.6 Fastening

Interior panels shall be attached so that there are no exposed unfinished or rough edges or rough surfaces. Fasteners should be corrosion resistant. Panels and fasteners shall not be easily removable by passengers. Exposed interior fasteners should be minimized, and where required shall be tamper-resistant.

3.69.7 Insulation

Any insulation material used between the inner and outer panels shall minimize the entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside the engine compartment shall not absorb or retain oils or water and shall be designed to prevent casual damage that may occur during maintenance operations.

The combination of inner and outer panels on the sides, roof, wheel wells and ends of the bus, and any material used between these panels, shall provide a thermal insulation sufficient to meet the interior temperature requirements. The bus body shall be thoroughly sealed so that the driver or passengers cannot feel drafts during normal operations with the passenger doors closed.

Insulation shall meet the requirements of FMVSS 302.

3.69.8 Floor Covering

The floor covering shall have a non-skid walking surface that remains effective in all weather conditions. The floor covering, as well as transitions of flooring material to the main floor and to the entrance and exit area, shall be smooth and present no tripping hazards. Seams shall be sealed/welded per manufacturer's specifications. The standee line shall be approximately 2 in. wide and shall extend across the bus aisle. The color and pattern shall be consistent throughout the floor covering.

Any areas on the floor that are not intended for standees, such as areas "swept" during passenger door operation, shall be clearly and permanently marked.

The floor shall be easily cleaned and shall be arranged to minimize debris accumulation.

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

The floor under the seats shall be covered with smooth surface flooring material. The floor covering shall closely fit the sidewall in a fully sealed butt joint or extend to the top of the cove.

3.69.9 Interior Lighting

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 lighting system may be designed to form part of or the entire air distribution duct.

The lens material shall be translucent polycarbonate. Lenses shall be designed to effectively "mask" the light source. Lenses shall be sealed to inhibit incursion of dust and insects yet be easily removable for service. Access panels shall be provided to allow servicing of components located behind light panels. If necessary, the entire light fixture shall be hinged.

Also provide pricing for this alternate option:
Automatically Dimming First Row Lights
The first light on each side (behind the driver and the front door) is normally turned on only when the front door is opened, in "night run" and "night park." As soon as the door closes, these lights shall go out. These lights shall be turned on at any time if the toggle switch is in the "on" position.

3.69.10 Passenger

Dimming Second Row Lights
To help eliminate windshield reflection on suburban roads where street lighting is at a low level, the second light on each side, when "night run" or "night park" is selected, shall be controlled by the toggle switch; off in "off" and on in "normal." These lights shall be turned on at any time if the toggle switch is in the "on" position.

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

The interior lighting design shall require the approval of the Agency.

LED lights.

First Light Modules Dim/Extinguish When Front Door is Closed
When the master switch is in the "run" or "night/run" mode, the first light module on each side of the coach shall automatically extinguish or dim when the front door is in the closed position and illuminate when the door is opened. This shall be accomplished through the use of a ballast specifically designed for this type application without diminishing the life of the fluorescent tubes.

3.69.11 Driver Area

The driver's area shall have a light to provide general illumination, and it shall illuminate the half of the steering wheel nearest the driver to a level of 5 to 10 foot-candles.

3.69.12 Seating Areas

The interior lighting system shall provide a minimum 15 foot-candle illumination on a 1 sq ft plane at an angle of 45 degrees from horizontal, centered 33 in. above the floor and 24 in. in front of the seat back at each seat position. Allowable average light level for the rear bench seats shall be 7 foot-candles.

3.69.13 Vestibules/Doors

Floor surface in the aisles shall be a minimum of 10 foot-candles, and the vestibule area a minimum of 4 foot-candles with the front doors open and a minimum of 2 foot-candles with the front doors closed. The front entrance area and curb lights shall illuminate when the front door is open and master run switch is in the "lights" positions. Rear exit area and curb lights shall illuminate when the rear door is unlocked.

3.69.14 Step Lighting

Step lighting for the intermediate steps between lower and upper floor levels shall be a minimum of 4 foot-candles and shall illuminate in all engine run positions. The step lighting shall be low-profile to minimize tripping and snagging hazards for passengers and shall be shielded as necessary to protect passengers' eyes from glare.

3.69.15 Ramp Lighting

Exterior and interior ramp lighting shall comply with CFR Part 49, Sections 19.29 and 19.31.

3.69.16 Turntable Lighting

Lighting in the turntable can be reduced to 7-foot candles.

3.69.17 Farebox Lighting

No farebox light.

3.70 Fare Collection

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

Transfer mounting, cutting and punching equipment shall be located in a position convenient to the driver.

Lextran shall use a 36" GFI Genfare Odyssey farebox. Lextran will provide the farebox which may be installed during manufacture of the bus or will be installed after the delivery of the bus.

Wiring – direct from battery to pedestal, GFI plug only (Odyssey).

3.71 Interior Access Panels and Doors

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Access doors shall be hinged with gas props or over-center springs, where practical, to hold the doors out of the mechanic's way. Panels shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover.

Access doors shall be secured with locks. The locks shall be standardized so that only one tool is required to open access doors on the bus.

3.71.1 Floor Panels

Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material at or around access openings shall be flush with the floor and shall be edge-bound with stainless steel or another material that is acceptable to the Agency to prevent the edges from coming loose. Access openings shall be asymmetrical so that reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor.

The number of special fastener tools required for panel and access door fasteners shall be minimized.

3.72 Passenger Seating

3.72.1 Arrangements and Seat Style

The passenger seating arrangement in the bus shall be such that seating capacity is maximized and in compliance to the following requirements.

Note: The Agency recognizes that ramp location, foot room, hip-to-knee room, doorway type, width, seat construction, floor level type, seat spacing requirements, ramp or lift, number of wheelchair positions, etc. ultimately affect seating capacity and layout.

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

3.72.2 Rearward Facing Seats

Rearward facing seats are not allowed.

3.72.3 Turntable Seating

Leaning rail.

3.72.4 Padded Inserts/Cushioned Seats

The passenger seats shall be equipped with vandal-resistant padded inserts throughout the bus (measure to uncompressed surface).

Padded Seat Configuration
Seating and interior trim shall have features to improve passenger comfort. The seat cushion and back shall be padded with a cellular foam product and is no less than ½-in. thick in areas contacted and loaded by passengers in the normal seated position and shall be covered with vinyl and/or fabric material.

Seats, back cushions and other pads shall be securely attached and shall be detachable by means of a simple release mechanism so that they are easily removable by the maintenance staff but not by 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.

3.72.5 Drain Hole in Seats

No requirements for drain hole provision in seat inserts.

3.72.6 Hip-to-Knee Room

Hip-to-knee room measured from the center of the seating position, from the front of one seat back horizontally across the highest part of the seat to vertical surface immediately in front, shall be a minimum of 26 in. At all seating positions in paired transverse seats immediately behind other seating positions, hip-to-knee room shall be no less than 27 in.

3.72.7 Foot Room

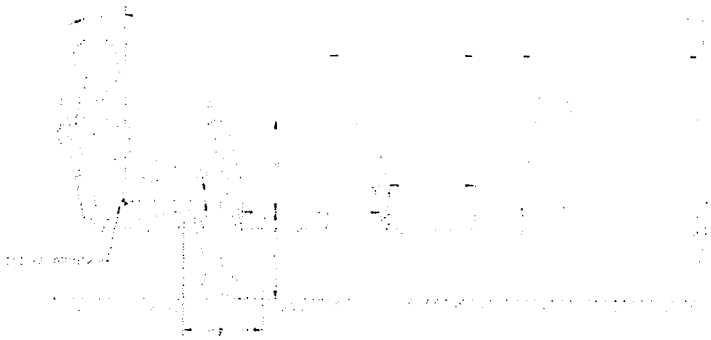
Foot room, measured at the floor forward from a point vertically below the front of the seat cushion, shall be no less than 14 in. Seats immediately behind the wheel housings and modesty panels may have foot room reduced.

3.72.8 Aisles

The aisle between the seats shall be no less than 20 in. wide at seated passenger hip height. Seat backs shall be shaped to increase this dimension to no less than 24 in. at 32 in. above the floor (standing passenger hip height).

3.72.9 Dimensions

FIGURE 7
Seating Dimensions and Standard Configuration



Seat dimensions for the various seating arrangements shall have the dimensions as follows (refer to Figure 7):

- The width, W, of the two-passenger transverse seat shall be a minimum 35 in.
- The length, L, shall be 17 in., plus or minus 1 in.
- The seat back height, B, shall be a minimum of 15 in.
- The seat height, H, shall be 17 in., plus or minus 1 in. For the rear lounge (or settee) and longitudinal seats, and seats located above raised areas for staorage of under-floor components, a cushion height of up to 18 in. plus or minus 2 in. will be allowed. This shall also be allowed for limited transverse seats, but only with the expressed approval of Lextran.
- Foot room = F.
- The seat cushion slope, S, shall be between 5 and 11 degrees.
- The seat back slope, C, shall be between 8 and 17 degrees.
- Hip to knee room = K.
- The pitch, P, is shown as reference only.

3.72.10 Structure and Design

The passenger seat frame and its supporting structure shall be constructed and mounted so that space under the seat is maximized and is completely free of obstructions to facilitate cleaning.

Seats, structures and restraints around the securement area should not infringe into the mobility device envelope or maneuverability.

The transverse seat structure shall be fully cantilevered from the sidewall with sufficient strength for the intended service. The lowest part of the seat assembly that is within 12 in. of the aisle shall be at least 10 in. above the floor.

In locations at which cantilevered installation is precluded by design and/or structure, other seat mounting may be allowed.

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 1000 lbs onto the femur of passengers ranging in size from a 5th-percentile female to a 95th-percentile male during a 10g deceleration of the bus. This deceleration shall peak at 0.05 to 0.015 seconds from initiation. Permanent deformation of the seat resulting from two 95th-percentile males striking the seat back during this 10g deceleration shall not exceed 2 in., measured at the aisle side of the seat frame at height H. The seat back should not deflect more than 14 in., measured at the top of the seat back, in a controlled manner to minimize passenger injury. Structural failure of any part of the seat or sidewall shall not introduce a laceration hazard.

The seat assembly shall withstand static vertical forces of 500 lbs applied to the top of the seat cushion in each seating position with less than ¼-in. permanent deformation in the seat or its mountings. The seat assembly shall withstand static horizontal forces of 500 lbs evenly distributed along the top of the seat back with less than ¼-in. 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-lb 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-in. pendulum and shall strike the seat back 10,000 times each from distances of 6, 8, 10 and 12 in. Seats at both seating positions shall withstand 4000 vertical drops of a 40-lb sandbag without visible deterioration. The sandbag shall be dropped 1000 times each from heights of 6, 8, 10 and 12 in. Seat cushions shall withstand 100,000 randomly positioned 3½-in. drops of a squirming, 150-lb, smooth-surfaced, buttocks-shaped striker with only minimal wear on the seat covering and no failures to seat structure or cushion suspension components.

The back of each transverse seat shall incorporate a handhold no less than ⅞ in. in diameter for standees and seat access/egress. The handhold shall not be a safety hazard during severe decelerations. The handhold shall extend above the seat back near the aisle so that standees shall have a convenient vertical assist, no less than 4 in. 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. The upper rear portion of the seat back and the seat back handhold immediately forward of transverse seats shall be padded and/or constructed of energy absorbing materials. During a 10g deceleration of the bus, the HIC number (as defined by SAE Standard J211a) shall not exceed 400 for passengers ranging in size from a 5th percentile female through a 95th percentile male.

The seat back handhold may be deleted from seats that do not have another transverse seat directly behind and where a vertical assist is provided.

Longitudinal seats shall be the same general design as transverse seats but without seat back handholds. Longitudinal seats may be mounted on the wheelhouses. Armrests shall be included on the ends of each set of longitudinal seats except on the forward end of a seat set that is immediately to the rear of a transverse seat, the driver's barrier, or a modesty panel, when these

fixtures perform the function of restraining passengers from sliding forward off the seat. Armrests are not required on longitudinal seats located in the wheelchair parking area that fold up when the armrest on the adjacent fixed longitudinal seat is within 3½ in. of the end of the seat cushion. Armrests shall be located from 7 to 9 in. above the seat cushion surface. The area between the armrest and the seat cushion shall be closed by a barrier or panel. The top and sides of the armrests shall have a minimum width of 1 in. and shall be free from sharp protrusions that form a safety hazard.

Seat back handhold and armrests shall withstand static horizontal and vertical forces of 250 lbs applied anywhere along their length with less than ¼-in. permanent deformation. Seat back handhold and armrests shall withstand 25,000 impacts in each direction of a horizontal force of 125 lbs with less than ¼-in. permanent deformation and without visible deterioration.

3.72.11 Construction and Materials

Selected materials shall minimize damage from vandalism and shall reduce cleaning time. The seats shall be attached to the frame with tamper-resistant fasteners. Coloring shall be consistent throughout the seat material, with no visually exposed portion painted. Any exposed metal touching the sides or the floor of the bus shall be stainless steel. The seat, pads and cushions shall be contoured for individuality, lateral support and maximum comfort and shall fit the framework to reduce exposed edges.

The minimum radius of any part of the seat back, handhold or modesty panel in the head or chest impact zone shall be a nominal ¼-in. The seat back and seat back handhold immediately forward of transverse seats shall be constructed of energy-absorbing materials to provide passenger protection and, in a severe crash, allow the passenger to deform the seating materials in the impact areas. Complete seat assemblies shall be interchangeable to the extent practicable.

Contractor will select seat fabric on the basis of durability, ease of maintenance and pleasing texture and appearance.

3.73 Passenger Assists

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

3.73.1 Assists

Excluding those mounted on the seats and doors, the assists shall have a cross-sectional diameter between 1¼ and 1½ in. or shall provide an equivalent gripping surface with no corner radii less than ¼ in. All passenger assists shall permit a full hand grip with no less than 1½ in. of knuckle clearance around the assist. Passenger assists shall be designed to minimize catching or snagging of clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.

Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Seat handholds may be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of anodized aluminum, stainless steel or powder-coated metal. Connecting tees and angles may be powder-coated metal castings. Assists shall withstand a force of 300 lbs applied over a 12-in. lineal dimension in any direction normal to the assist without permanent visible deformation. All passenger assist components, including brackets, clamps, screw heads and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

3.73.2 Front Doorway

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

3.73.3 Vestibule

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

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

3.73.4 Rear Doorway(s)

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the transverse seat immediately forward of the rear door and on the aisle side of the rear door modesty panel(s). Passenger assists shall be provided on modesty panels that are functionally continuous with the rear door assists. Rear doors, or the exit area, shall be fitted with assists having a cross-sectional diameter between 1¼ and 1½ in. or providing an equivalent

gripping surface with no corner radii less than ¼ in., and shall provide at least 1½ in. of knuckle clearance between the assists and their mounting. The assists shall be designed to permit a 5th-percentile female to easily move from one assist to another during the entire exiting process. The assists shall be located no farther inboard than 6 in. from the outside edge of the rear doorway step.

3.73.5 Overhead

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

No requirements for overhead grab straps/extensions.

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

3.73.6 Longitudinal Seat Assists

Longitudinal seats shall have vertical assists located between every other designated seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist. Assists shall be staggered across the aisle from each other where practicable and shall be no more than 52 in. apart or functionally continuous for a 5th percentile female passenger.

3.73.7 Wheel Housing Barriers/Assists

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

3.74 Passenger Doors

Doorways will be provided in the locations and styles as follows. Passenger doors and doorways shall comply with ADA requirements.

TABLE 6
Door Locations and Styles

Front Door				
Location	Slide Glide	Double (Two-Piece Pantograph	Single (One-Piece Pantograph)	Outside Sliding Plug
Forward of the front wheels and under direct observation of the driver.				

Rear Doors(s)						
Location	Slide Guide	Outward Opening Swing With Manual Emergency Reset	Outward Opening Swing With Auto Emergency Reset	Double (Two-Piece Pantograph	Single (One-Piece Pantograph)	Outside Sliding Plug
Alternative 1: Curbside doorway centerline located rearward of the point midway between the front door centerline and the rearmost seat back.						
Alternative 2: Curbside doorway located behind the rear axle.						
Alternative 3: Street-side rearward of the point midway between the front door centerline and the rearmost seat back.						
Alternative 4: Street-side located behind the rear axle.						
Alternative 5 (articulated only): Curbside located forward of the rear axle of the trailer section.						
Alternative 6 (articulated only): Street-side located forward of the rear axle of the trailer section.						
Alternative 7 (articulated only): Curbside, located forward of center axle.						

In cases where street-side and curbside doors are chosen, provisions shall be made for operating the front door, curbside rear door(s) and street-side rear door(s) independently or in the following combinations while providing positive tactile feedback to the operator identifying the door control selection.

TABLE 7
Door Operating Combinations

Front	Curbside Rear	Street-Side Rear
Closed	Closed	Closed
Open	Closed	Closed
Open	Open	Closed
Open	Closed	Open
Open	Open	Open
Closed	Open	Closed
Closed	Closed	Open
Closed	Open	Open

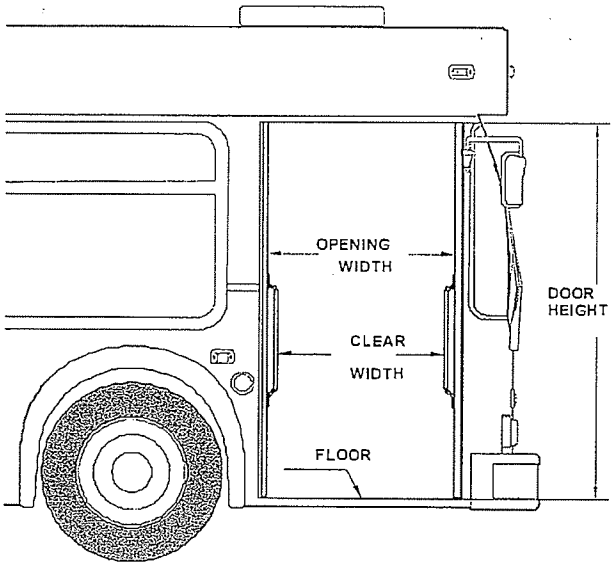
If air-powered, the door system shall operate per specification at air pressures between 90 and 130 psi.

Materials and Construction

Structure of the doors, their attachments, inside and outside trim panels and any mechanism exposed to the elements shall be corrosion-resistant. Door panel construction shall be of corrosion-resistant metal or reinforced non-metallic composite materials. When fully opened, the doors shall provide a firm support and shall not be damaged if used as an assist by passengers during ingress or egress. Door edges shall be sealed to prevent infiltration of exterior moisture, noise, dirt and air elements from entering the passenger compartment, to the maximum extent possible based on door types.

The closing edge of each door panel shall have no less than 2 in. of soft weather stripping. The doors, when closed, shall be effectively sealed, and the hard surfaces of the doors shall be at least 4 in. apart. The combined weather seal and window glazing elements of the front door shall not exceed 10 degrees of binocular obstruction of the driver's view through the closed door.

FIGURE 8
Transit Bus Minimum Door Opening



When open, the doors shall leave an opening no less than 75.3 in. in height.

31 ¾ -in. Minimum Doorway Clear Width
Front door clear width shall be a minimum of 31¾ in. with the doors fully opened.

Rear door opening clear width shall be a minimum of 24 in. with the doors fully opened. If a rear door ramp or lift is provided, then the clear door opening width shall be a minimum of 31¾ in. with door fully opened.

If the Agency requires a minimum rear door clear width of 31¾ in. or greater and an outward opening (swing) door is specified, then the maximum outboard excursion of 13 in. may be exceeded.

3.74.2 Door Glazing

The upper section of both front and rear doors shall be glazed for no less than 45 percent of the respective door opening area of each section. The lower section of the front door shall be glazed for no less than 25 percent of the door opening area of the section.

Door glazing shall be easily replaceable.

Full exterior glass quick change glazing hidden frame (tempered glass only).

Glazing material in the rear doorway door panels shall be defined by Lextran.

3.74.3 Door Projection

Exterior
The exterior projection of the front doors beyond the side of the bus shall be minimized and shall not block the line of sight of the rear exit door via the curb side mirror when the doors are fully open. The exterior projection of both doors shall be minimized and shall not exceed 13 in. during the opening or closing cycles or when doors are fully opened.

Interior
Projection inside the bus shall not cause an obstruction of the rear door mirror or cause a hazard for standees.

3.74.4 Door Height Above Pavement

It shall be possible to open and close either passenger door when the bus loaded to gross vehicle weight rating is not knelt and parked with the tires touching an 8-in.-high curb on a street sloping toward the curb so that the street side wheels are 5 in. higher than the right side wheels.

3.74.5 Closing Force

Closing door edge speed shall not exceed 12 in. per second, and opening door speed shall not exceed 19 in. per second. Power doors shall not slam closed under any circumstance, even if the door is obstructed during the closing cycle. If a door is obstructed during the closing cycle, the pressure exerted on the obstruction shall not increase once initial contact has been made.

Power-close rear doors shall be equipped with an obstruction sensing system such that if an obstruction is within the path of the closing doors, the doors will stop and/or reverse direction prior to imparting a 10-lb force on 1 sq in. of that obstruction. If a contactless obstruction sensing system is employed, it shall be capable of discriminating between the normal doorway environment and passengers or other obstructions within the doorway, and of altering the zones of detection based upon the operating state of the door system.

Doors closed by a return spring or counterweight-type device shall be equipped with an obstruction-sensing device that, at a minimum, alerts the driver if an obstruction is detected between the closing doors. Doors closed by a return spring or counterweight type device, when unlocked, shall be capable of being pushed to the point where the door starts to open with a force not to exceed 25 lbs 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 1½ in. diameter cylinder from between the center edges of a closed and locked door with an outward force not greater than 35 lbs.

3.74.6 Actuators

Doors shall open or close completely in not more than 3.5 seconds from the time of control actuation and shall be subject to the closing force requirements.

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

Door actuators and associated linkages shall maximize door holding forces in the fully open and fully closed positions to provide firm, non-rattling, non-fluttering door panels while minimizing the force exerted by the doors on an obstruction midway between the fully open and closed positions.

The rear door actuator(s) shall be under the complete control of the vehicle operator and shall open and close in response to the position of the driver's door control.

A switch located within reach of the seated operator shall, when actuated, restore rear door function to complete operator control, as described in the "Default."

Doors that employ a "swing" or pantograph geometry and/or are closed by a return spring or counterweight-type device shall be equipped with a positive mechanical holding device that automatically engages and prevents the actuation mechanism from being back-driven from the fully closed position. The holding device shall be overcome only when the driver's door control is moved to an "Exit Door Enable" position and the vehicle is moving at a speed of less than 2 mph, or in the event of actuation of the emergency door release.

Locked doors shall require a force of more than 300 lbs 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, actuators or complex mechanism.

3.74.7 Rear Door Interlocks

See "Hardware Mounting" for door system interlock requirements.

3.74.8 Emergency Operation

In the event of an emergency, it shall be possible to manually open doors designated as emergency exits from inside the bus using a force of no more than 25 lbs after actuating an unlocking device. The unlocking device 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 doorway area. The unlocking device shall be easily reset by the operator without special tools or opening the door mechanism enclosure. Doors that are required to be classified as "Emergency Exits" shall meet the requirements of FMVSS 217.

3.74.9 Door Control

The door control shall be located in the operator's area within the hand reach envelope described in SAE Recommended Practice J287, "Driver Hand Control Reach." The driver's door control shall provide tactile feedback to indicate commanded door position and resist inadvertent door actuation.

3.74.10 Door Controller

Five Position Driver's Door Controller
The control device shall be protected from moisture. Mounting and location of the door control device handle shall be designed so that it is within comfortable, easy arm's reach of the seated driver. The door control device handle shall be free from interference by other equipment and have adequate clearance so as not to create a pinching hazard.

Position of the door control handle shall result in the following operation of the front and rear doors:

- Center position: Front door closed, rear door(s) closed or set to lock.
- First position forward: Front door open, rear door(s) closed or set to lock.
- Second position forward: Front door open, rear door(s) open or set to open.
- First position back: Front door closed, rear door(s) open or set to open.
- Second position back: Front door open, rear door(s) open or set to open.

3.74.11 Door Open/Close

Operator-Controlled Front and Rear Doors
Operation of, and power to, the passenger doors shall be completely controlled by the operator.

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

3.75 Accessibility Provisions

Space and body structural provisions shall be provided at the front or rear door of the bus to accommodate a wheelchair loading system.

3.75.1 Loading Systems

There are three options:

- High-floor lift
- Low-floor ramp
- Platform (boarding bridgeplate) level boarding

3.75.2 Lift

The wheelchair lift control system must be capable of receiving multiplex command from vehicle interlocks.

An automatically controlled, power-operated wheelchair lift system compliant to requirements defined in 49 CFR 571.403 (FMVSS 403) shall provide ingress and egress quickly, safely and comfortably, both in forward and rearward directions, for a passenger in a wheelchair from a level street or curb.

Wheelchair lift mounted in front stepwell.

The loading platform shall be covered with a replaceable or renewable nonskid material and shall be fitted with devices to prevent the wheelchair from rolling off the sides during loading or unloading.

Deployment or storage of the ramp shall require no more than 15 seconds. The device shall function without failure or adjustment for 500 cycles or 5000 miles in all-weather conditions on the design operating profile when activated once during the idle phase. A manual override system shall permit unloading a wheelchair and storing the device in the event of a primary power failure. The manual operation of the ramp shall not require more than 35 lbs of force.

Heavy-Duty Ramp System
Power units must meet other spec requirements (hydraulic or electric).

3.75.3 Loading System for 30- to 60-ft Low-Floor Bus

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

Front Door Location of Loading System, Flip-Out Design Ramp with 6:1 Slope
The wheelchair loading system shall be located at the front door, with the ramp being of a simple hinged, flip-out type design being capable of deploying to the ground at a maximum 6:1 slope.

3.75.4 Wheelchair Accommodations

Two forward-facing locations, as close to the wheelchair loading system as practical, shall provide parking space and securement system compliant with ADA requirements for a passenger in a wheelchair.

3.75.5 Interior Circulation

Maneuvering room inside the bus shall accommodate easy travel for a passenger in a wheelchair from the loading device and from the designated securement area. It shall be designed so that no

portion of the wheelchair protrudes into the aisle of the bus when parked in the designated parking space(s). When the positions are fully utilized, an aisle space of no less than 20 in. shall be maintained. As a guide, no width dimension should be less than 34 in. Areas requiring 90-degree turns of wheelchairs should have a clearance arc dimension no less than 45 in., and in the parking area where 180-degree turns are expected, space should be clear in a full 60-in.-diameter circle. A vertical clearance of 12 in. above the floor surface should be provided on the outside of turning areas for wheelchair footrest.

3.76 Destination Signs

A destination sign system shall be furnished on the front, on the right side near the front door.

All signs shall be controlled via a single human-machine interface (HMI). In the absence of a single mobile data terminal (MDT), the HMI shall be conveniently located for the bus driver within reach of the seated driver.

The sign must be able to interface with Lextran's current systems. Lextran has been provided various technology items, such as an MDT, GPS, passenger counters, etc. by Avail Technologies.

The destination sign compartments shall meet the following minimum requirements:

- Compartments shall be designed to prevent condensation and entry of moisture and dirt.
- Compartments shall be designed to prevent fogging of both compartment window and glazing on unit itself.
- Access shall be provided to allow cleaning of inside compartment window and unit glazing.
- Front window shall have an exterior display area of no less than 8.5 in. high by 56 in. wide.

3.77 Passenger Information and Advertising

3.77.1 Interior Displays

Provisions shall be made on the rear of the driver's barrier or equipment box located on the wheel well for a frame to retain information such as routes and schedules.

Advertising media 11 in. high and 0.09 in. thick shall be retained near the juncture of the bus ceiling and sidewall. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the interior light system.

3.77.2 Exterior Displays

Provisions shall be made to integrate advertising into the exterior design of the bus. Advertising media, frames or supporting structures shall not detract from the readability of destination signs and signal lights, and shall not compromise passenger visibility. 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 bus.

3.78 Passenger Stop Request/Exit Signal

Use for Touch Tape Passenger Signal
A passenger "stop requested" signal system that complies with applicable ADA requirements defined in 49 CFR, Part 38.37 shall be provided. The system shall consist of a touch tape, chime, and interior sign message. The touch tape shall be accessible to all seated passengers, with provisions for standees. It shall be easily accessible to all passengers, seated or standing. Vertical touch tape shall be provided at each window mullion and adjacent to each wheelchair parking position and priority seating positions.

Also provide pricing for this alternate option:
Pull Cord Passenger Signal
A passenger "stop requested" signal system that complies with applicable ADA requirements defined in 49 CFR, Part 38.37 shall be provided. The system shall consist of a heavy-duty pull cable, chime and interior sign message. The pull cable shall be located the full length of the bus on the sidewalls at the level where the transom is located. If no transom window is required, the height of the pull cable shall approximate this transom level and shall be no greater than 63 in. as measured from the floor surface. It shall be easily accessible to all passengers, seated or standing. Pull cable(s) shall activate one or more solid state or magnetic proximity switches. At each wheelchair passenger position and at priority seating positions, additional provisions shall be included to allow a passenger in a mobility aid to easily activate the "stop requested" signal. An auxiliary passenger "stop requested" signal shall be installed at the rear door to provide passengers standing in the rear door/exit area convenient means of activating the signal system. The signal shall be a heavy-duty push button type located in the rear door vicinity. Button shall be clearly identified as "passenger signal."

A single "stop requested" chime shall sound when the system is first activated. A double chime shall sound anytime the system is activated from wheelchair passenger areas.

Exit signals located in the wheelchair passenger area shall be no higher than 4 feet above the floor. Instructions shall be provided to clearly indicate function and operation of these signals.

3.79 Communications

3.79.1 Camera Surveillance System

The Contractor shall provide all wiring and mounting locations for a multi-camera surveillance system including the installation of cameras, recorder, microphone, etc. Lextran currently uses cameras from Verint, including a DVR with 320gig removable hard drive.

3.79.2 Public Address System

A public address system shall be provided on each bus for facilitating radio system and driver-originated announcements to passengers.

Speakers
Six (6) interior loudspeakers shall be provided, semi-flush mounted, on alternate sides of the bus passenger compartment, installed with proper phasing. Total impedance seen at the input connecting end shall be 8 Ohms. Mounting shall be accomplished with riv-nuts and machine screws.

The speaker cable shall terminate at the instrument panel area on the curb side with a minimum of 3 feet of extra speaker cable. An end connector shall be supplied so a lead can be connected from the radio control head in order to make announcements directly from the transit control center to passengers through the PA system.

3.79.3 Automatic Passenger Counter (APC)

An infrared APC system shall be installed. Lextran currently uses an APC provided by Avail Technologies.

3.79.4 Radio Handset and Control System

Driver's Speaker
Each bus shall have a recessed speaker in the ceiling panel above the driver. This speaker shall be the same component used for the speakers in the passenger compartment. It shall have 8 Ohms of impedance.

Handset
Contractor will install a handset for driver use.

Driver Display Unit (DDU)
Contractor shall install a driver display unit as close to the driver's instrument panel as possible.

Emergency Alarm
Contractor shall install an emergency alarm that is accessible to the driver but hidden from view.

3.80 ITS Technology

The ITS Technology on the buses shall be Avail Technologies – Full CAD/AVL System, including APCs and Verint Camera System.

3.81 Warranties

Proposers shall state all warranties that apply for the vehicles that are being offered. Lextran is seeking the following warranties at a minimum:

- Basic Bus, bumper to bumper – one (1) year, 50,000 miles

- Engine – two (2) year, 100,000 miles unlimited warranty; proposers should also price an option for a 5-year warranty, if available
- Transmission – two (2) year, 100,000 miles
- Drive Axle – two (2) year, 100,000 miles
- Wheelchair Ramp – two (2) years, 100,000 miles
- A/C System – two (2) year, 100,000 miles unlimited warranty
- A/C Compressor – two (2) year, 100,000 miles unlimited warranty
- Brakes – two (2) years, 100,000 miles
- Body Structure – three (3) year, 150,000 miles
- Structural Integrity, Corrosion – twelve (12) year, 500,000 miles

3.81.1 Contractor Warranty

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 the original Agency each complete bus and specific subsystems and components as follows. Performance requirements based on design criteria shall not be deemed a warranty item.

3.81.2 Complete Bus

The complete bus, propulsion system, components, major subsystems and body and chassis structure are warranted to be free from defects and related defects for one year or 50,000 miles, whichever comes first, beginning on the date of revenue service but not longer than 15 days after acceptance. The warranty is based on regular operation of the bus under the operating conditions prevailing in the Agency's locale.

3.81.3 Body and Chassis Structure

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

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

3.81.4 Propulsion System

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

3.81.5 Emission Control System (ECS)

The Contractor warrants the emission control system for five years or 100,000 miles, whichever comes first. The ECS shall include, but is not limited to, the following components:

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

3.81.6 Subsystems

Other subsystems shall be warranted to be free from defects and related defects for two years or 100,000 miles, whichever comes first. Other subsystems are listed below:

- Brake system: Foundation brake components, including advancing mechanisms, as supplied with the axles, excluding friction surfaces.
- Destination signs: All destination sign equipment for the front, side and rear signs, power modules and operator control.
- Heating, ventilating: Roof and/or rear main unit only, excluding floor heaters and front defroster.
- AC unit and compressor: Roof and/or rear main unit only, excluding floor heaters and front defroster.
- Door systems: Door operating actuators and linkages.
- Air compressor
- Air dryer
- Wheelchair lift and ramp system: Lift and/or ramp parts and mechanical only
- Starter
- Alternator: Alternator only. Does not include the drive system.
- Charge air cooler: Charge air cooler including core, tanks and including related surrounding framework and fittings.
- Fire suppression: Fire suppression system including tank and extinguishing agent dispensing system
- Hydraulic systems: Including radiator fan drive and power steering as applicable.
- Engine cooling systems: Radiator including core, tanks and related framework, including surge tank.
- Transmission cooler
- Passenger seating excluding upholstery
- Full storage and delivery system

3.81.7 Serial Numbers

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

- Engine
- Transmission
- Alternator

- Starter
- A/C compressor and condenser/evaporator unit
- Drive axle
- Power steering unit
- Fuel cylinders (if applicable)
- Air compressor
- Wheelchair ramp (if applicable)

The Contractor shall provide updated serial numbers resulting from warranty campaigns. The format of the list shall be approved by the Agency prior to delivery of the first bus.

3.81.8 Fleet Defects

A Fleet Defect is defined as cumulative failures of twenty-five (25) percent of the same components in the same or similar application in a minimum fleet size of twelve (12) or more buses where such items are covered by warranty. A Fleet Defect shall apply only to the base warranty period in sections entitled "Complete Bus," "Propulsion System" and "Major Subsystems." When a Fleet Defect is declared, the remaining warranty on that item/component stops. The warranty period does not restart until the Fleet Defect is corrected.

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

The Contractor shall correct a Fleet Defect under the warranty provisions defined in "Repair Procedures." After correcting the Defect, the Agency and the Contractor shall mutually agree to and the Contractor shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same Defect in all other buses and spare parts purchased under this Contract. Where the specific Defect can be solely attributed to particular identifiable part(s), the work program shall include redesign and/or replacement of only the defectively designed and/or manufactured part(s). In all other cases, the work program shall include inspection and/or correction of all of the buses in the fleet via a mutually agreed-to arrangement. The Contractor shall update, as necessary, technical support information (parts, service and operator's manuals) due to changes resulting from warranty repairs. The Agency may immediately declare a Defect in design resulting in a safety hazard to be a Fleet Defect. The Contractor shall be responsible to furnish, install and replace all defective units.

The Fleet Defect warranty provisions shall not apply to Agency-supplied items, such as radios, fare collection equipment, communication systems and tires. In addition, Fleet Defects shall not apply to interior and exterior finishes, hoses, fittings and fabric.

4. OTHER TERMS AND CONDITIONS

4.1 It is the intent of the Authority for this project to start as soon as possible after the award of a contract or contracts to the successful proposer(s).

4.2 Terms of payment will be 30 days after receipt of invoice. The Authority will not pay for goods until they have been delivered or for services until they have been performed. Invoices must be sent in a timely manner. Work not billed within 90 days of completion shall not be eligible for reimbursement.

4.3 The contract awarded to the successful proposer(s) will be for a term of five years.

5. DOCUMENTATION TO BE SUBMITTED WITH PROPOSALS

The proposer's proposal should be presented in the format described below. The proposer shall supply the following with their proposal:

1. A letter offering the proposal in response to this request, including all cost information, signed by an authorized executive of the company.
2. Three references with addresses, phone numbers and contact persons. These references shall include current and accurate contact information for personnel that can speak to the quality of the services that have been provided in the past by the proposer.
3. The following enclosures shall be completed and returned:
    - Bidder Information Page
    - Buy America Certification
    - Certification of Restrictions on Lobbying
    - Certification of Contractor Regarding Debarment and Suspension
    - Non-Collusion Affidavit
    - Certificate of Procurement Integrity
    - Addenda Acknowledgement Form

6. EVALUATION OF PROPOSALS

The evaluations will be based primarily on cost but shall also consider all factors listed in Section 2, Scope of Work. Evaluations shall be completed by an evaluation team established by the Authority as set forth in the Authority's Procurement Policy.

The evaluation team may elect to interview those proposers in the competitive range in order to clarify their proposal or to give an oral presentation. The Authority reserves the right to re-evaluate proposals based on these presentations.

In any event, the Authority reserves the right to accept other than the lowest price proposal, reject any and all proposals, or to negotiate separately with any source whatsoever in any manner necessary to serve the best interest of the Authority.

The following evaluation criteria shall be used:

- Cost of the proposed vehicles
- Degree to which the specifications of the proposed vehicles meet or exceed Lextran's specifications
- Delivery time

- Qualifications and experience of the firm and/or individuals
- References

7. OPEN RECORDS NOTIFICATION

All information appearing within the proposal is subject to public inspection as per the Kentucky Open Records Act, KRS 61.870. Any proprietary information eligible to be excluded from an open records request must be clearly marked as such on each individual page on which proprietary information appears. Proposers may not make a blanket or all-inclusive confidentiality/proprietary statement. For the purpose of determining an eligible exclusion, KRS 61.878 describes proprietary information in the following manner: "Upon and after July 15, 1992, records confidentially disclosed to an agency or required by an agency to be disclosed to it, generally recognized as confidential or proprietary, which if openly disclosed would permit an unfair commercial advantage to competitors of the entity that disclosed the records".

INFORMATION PAGE FOR BIDDERS LIST

49 CFR, Part 26 requires that all recipients of federal funds collect certain information from all proposers and bidders submitting responses to solicitations. Please fill out this form completely. Any offer that does not contain a completed copy of this form will be ruled as non-responsive and dropped from further consideration in the procurement process for this solicitation.

COMPANY: _____

ADDRESS: _____

CITY: _____ **STATE:** _____ **ZIP:** _____

CONTACT NAME: _____

TELEPHONE: _____ **FAX:** _____

EMAIL ADDRESS: _____

General Classification of Firm by Number of Employees:

___ Less Than 10 ___ 11 – 50 ___ 51 – 100 ___ 101 – 500

___ 501 – 1000 ___ 1001 – 5000 ___ More Than 5000

General Classification of Firm in Age of Existence:

___ 0 – 5 Years ___ 6 – 10 Years ___ 11 – 50 Years ___ Over 50 Years

General Classification of Firm by Annual Gross Income:

___ Less than $100,000 ___ $100,000 - $ 250,000 ___ $250,001 - $500,000

___ $500,001 - $1,000,000 ___ $1,000,001 - $5,000,000 ___ Over $5,000,000

General Classification of Firm by Type:

___ Firm is a certified DBE ___ Firm is a certified MBE

___ Firm is a certified WBE ___ Firm is not certified as any of the previous types

I certify this information is accurate to the best of my knowledge.

SIGNATURE: _____ **DATE:** _____

BUY AMERICA CERTIFICATION

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date _____

Signature _____

Company Name _____

Title _____

OR

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Proposers shall fill out either the compliance form or the non-compliance form. Proposals that have both forms filled out shall be deemed to be non-responsive and shall not be considered for award.

TRANSIT AUTHORITY OF LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
CERTIFICATION OF RESTRICTIONS ON LOBBYING

THE UNDERSIGNED HEREBY CERTIFIES ON BEHALF OF

_____that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any 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-LLL, "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 sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is 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, U.S. 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.

Executed this ____ day of _____, 20

Name of Proposer:_____

Address:_____

City, State, Zip:_____

Signature of Authorized Official:_____

Title of Official:_____

Telephone_____ Date:_____

TRANSIT AUTHORITY OF LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

CERTIFICATION OF CONTRACTOR REGARDING DEBARMENT, SUSPENSION, AND OTHER INELIGIBILITY AND VOLUNTARY EXCLUSION

The undersigned, an authorized official of the Proposer stated below, certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(If the undersigned is unable to certify to any of the statements in this certification, such official shall attach an explanation to this proposal).

THE UNDERSIGNED 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.

Name of Proposer_____

Address _____

City, State, Zip_____

Signature of Authorized Official_____

Title of Official_____

Telephone_____ Date_____

PROPOSAL REQUIREMENT

NOTE: Each proposer shall furnish this affidavit, properly executed and containing all required information, with his/her proposal. **IF YOU FAIL TO COMPLY, YOUR PROPOSAL WILL NOT BE CONSIDERED.**

NON-COLLUSION AFFIDAVIT

Commonwealth Of Kentucky

County of _____

_____ SS: _____ being first duly sworn deposes and says:

Individual only: That he is an individual doing business under the name of_____ at __ _____in the City of_____ State of _____.

Partnership only: That he is duly authorized representative of a partnership doing business under the name of _____ in the City of State of _____.

Corporation only: That he is duly authorized, qualified and acting_____ of , a corporation organized and existing under the laws of the State of _____, and that said partnership or said corporation is filling herewith a proposal to the Transit Authority of LEXINGTON, KENTUCKY in conformity with the foregoing Scope of Work:

Individual only: Affiant further says that the following is a complete and accurate list of the names and addresses of all persons interested in said proposed contract: Affiant further says that he is represented by the following attorney (s):
.and is also represented by the following resident agents in the City of Lexington:

Partnership only: Affiant further says that the following is a complete and accurate list of the names and addresses of the members of said partnership:
Affiant further says that said partnership is represented by the following attorney(s):_____and is also represented by the following resident agents in the City of Lexington:

Corporation only: Affiant further says that the following is a complete and accurate list of the officers, directors and attorneys of said corporations:

President: _____
Directors:_____
Vice President: _____
Secretary:_____
Treasurer:_____
Local Manager of Statutory Agent:_____
Attorneys:_____
And that the following officers are duly authorized to execute contracts on behalf of said corporation:_____

Affiant further says that the proposal filed herewith is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation; that such proposal is genuine and not collusion or sham; that said proposer has not, directly or indirectly, induced or solicited any other proposer to put in a false or sham proposal, and has not directly or indirectly colluded conspired, connived or agreed with any proposer or anyone else to put in a sham proposal, or that anyone shall refrain from proposing; that said proper has not in any manner, directly or indirectly, sought by agreement, communication or conference with other proposer , or to fix any overhead, profit, or cost element of such proposal price or that any other proposer or to secure any advantage against the Transit Authority of LEXINGTON, KENTUCKY, or anyone interested in the proposed contract; that all statements contained in such proposal are true; that said proposer has not directly, or indirectly , submitted his price or any break-down thereof or the contents thereof, or divulged information or data relative thereto, or paid or agreed to pay, directly or indirectly, any money or other valuable consideration , assistance or aid rendered or to be rendered in procuring or attempting to procure the contract above referred to, to any corporation, partnership, company, association, organization, or to any member or agent thereof, or to any other individual, except such persons as herein above disclosed to have a partnership or other financial interest with said proposer will not pay or agree to pay, directly or indirectly, any money or other valuable consideration to any corporation, partnership, company association, organization or to assistance in securing contract above referred to in the event the same is awarded to:

Further affiant saith not.

_____

(Sign Here)

Sworn to before me and subscribed in the presence this____day of_____, 20__.

Notary Public: _____

My Commission Expires: _____ _____, 20____

TRANSIT AUTHORITY OF LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

CERTIFICATE OF PROCUREMENT INTEGRITY

I, _____ am the officer or employee responsible
(Name of Certifier)

for the preparation of this proposal and hereby certify that, for the best of my knowledge and belief, with the exception of any information described in this certificate, I have no information concerning a violation or possible violation of Subsection 27(a), (b), (c), or (e) of the office of Federal Procurement Policy Act* (41 U.S.C. 423) (hereinafter referred to as "the Act"), as implemented in the Federal Acquisition Regulations (FAR), occurring during the conduct of this procurement. As required by Subsection 27(d)(1)(B) of the Act, I further certify that each officer, employee, agent, representative, and consultant of _____ _____ (name of proposer) who has participated personally and substantially in the preparation or submission of this offer has certified that he or she is familiar with, and will comply with, the requirements of Subsection 27(a) of the Act, as implemented in the FAR, and will report immediately to me any information concerning any violation or possible violation of the Act, as implemented in the FAR, pertaining to this procurement.

Violations or possible violations: (Continue on plain bond paper if necessary and label Certificate of Procurement Integrity (Continuation Sheet). ENTER "NONE" IF NONE EXISTS)

_____ Date _____
Signature of the Officer or Employee
Responsible for the Offer

_____
Typed Name of the Officer or Employee for
the Offer

* Section 27 became effective on September 16, 1989.
THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKE SUBJECT TO PROSECUTION UNDER TITLE 18, UNITED STATES CODE SECTION 1001.

ADDENDA ACKNOWLEDGEMENT FORM

Addenda Received (if none received check here) _____ None Received

Addendum No. _____ Date Received:

Addendum No. _____ Date Received:

Addendum No. _____ Date Received:

Addendum No. _____ Date Received:

Addendum No. _____ Date Received:

Addendum No. _____ Date Received:

Name of Individual, partner or corporation: _____

Street Address:_____

City, State and Zip Code:_____

Telephone Number:_____

Printed Name:_____

Authorized Signature:_____

Title:_____

SECTION II

GENERAL PROVISIONS
REQUIRED FEDERAL CLAUSES

The Transit Authority of Lexington-Fayette Urban County Government (LexTran) is a recipient of federal funds and is mandated to follow specific guidelines in the procurement of goods and services. The following clauses shall be incorporated by reference into any contract that results from this solicitation. Not all required clauses may pertain to this solicitation.

Definitions used herein:

- The terms "respondent, bidder, proposer, and contractor" mean the offerer or vendor.
- The terms "the Authority" and "recipient" (as in recipient of FTA funds) mean the Transit Authority of Lexington-Fayette Urban County Government (LexTran).
- The term "USDOT" means the United States Department of Transportation.
- The term "FTA" means the Federal Transportation Administration.

1. Fly America Requirements

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

The Fly America requirements apply to the transportation of persons or property, by air, between a place in the U.S. and a place outside the U.S., or between places outside the U.S., when the FTA will participate in the costs of such air transportation. Transportation on a foreign air carrier is permissible when provided by a foreign air carrier under a code share agreement when the ticket identifies the U.S. air carrier's designator code and flight number. Transportation by a foreign air carrier is also permissible if there is a bilateral or multilateral air transportation agreement to which the U.S. Government and a foreign government are parties and which the Federal DOT has determined meets the requirements of the Fly America Act.

2. Buy America Requirements

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA

or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content.

A bidder or offeror must submit to LexTran the appropriate Buy America certification with all bids or offers on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.

The Buy America requirements apply to the following types of contracts: Construction Contracts and Acquisition of Goods or Rolling Stock (valued at more than $100,000).

The Buy America requirements flow down from the Authority to first tier contractors, who are responsible for ensuring that lower tier contractors and subcontractors are in compliance. The $100,000 threshold applies only to the grantee contract, subcontracts under that amount are subject to Buy America.

3. Cargo Preference Requirements

Use of United States-Flag Vessels - The contractor agrees: a. 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 underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels; b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of leading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the Authority (through the contractor in the case of a subcontractor's bill-of-lading.) c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

The Cargo Preference requirements apply to all contracts involving equipment, materials, or commodities which may be transported by ocean vessels.

4. Energy Conservation Requirements

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

The Energy Conservation requirements are applicable to all contracts.

The Energy Conservation requirements extend to all third party contractors and their contracts at every tier and subrecipients and their subagreements at every tier.

5. Clean Water Requirements

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq . The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

The Clean Water requirements apply to each contract and subcontract which exceeds $100,000.

6. Bus Testing

The Contractor [Manufacturer] agrees to comply with 49 U.S.C. A 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: _____

Signature: _____

Company Name: _____

Title: _____

The Bus Testing requirements pertain only to the acquisition of Rolling Stock/Turnkey.

7. Pre-Award and Post Delivery Audits Requirement

The Contractor agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

(1) Buy America Requirements: The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Bidder/Offeror certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

(2) Solicitation Specification Requirements: The Contractor shall submit evidence that it will be capable of meeting the bid specifications.

(3) Federal Motor Vehicle Safety Standards (FMVSS): The Contractor shall submit 1) manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

(To be submitted with a bid or offer exceeding the small purchase threshold for Federal assistance programs, currently set at $100,000.)

Certificate of Compliance

The bidder hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 C.F.R. 661.11:

Date: _____

Signature: _____

Company Name: _____

Title: _____

Certificate of Non-Compliance

The bidder hereby certifies that it cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Date: _____

Signature: _____

Company Name: _____

Title: _____

These requirements apply only to the acquisition of Rolling Stock/Turnkey.

8. Lobbying

Lobbying Certification and Disclosure of Lobbying Activities for third party contractors are mandated by 31 U.S.C. 1352(b)(5), as amended by Section 10 of the Lobbying Disclosure Act of 1995, and DOT implementing regulation, "New Restrictions on Lobbying," at 49 CFR § 20.110(d)

Language in Lobbying Certification is mandated by 49 CFR Part 19, Appendix A, Section 7, which provides that contractors file the certification required by 49 CFR Part 20, Appendix A.

Modifications have been made to the Lobbying Certification pursuant to Section 10 of the Lobbying Disclosure Act of 1995.

Use of "Disclosure of Lobbying Activities," Standard Form-LLL set forth in Appendix B of 49 CFR Part 20, as amended by "Government wide Guidance For New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96) is mandated by 49 CFR Part 20, Appendix A.

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of $100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying". Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to LexTran.

The Lobbying requirements apply to contracts of $100,000 or more.

9. Access to Records and Reports

The following access to records requirements apply to this Contract:

1. Since LexTran is a local government and is an FTA Recipient in accordance with 49 C. F. R. 18.36(i), the Contractor agrees to provide LexTran, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C. F. R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.

2. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

3. The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

4. FTA does not require the inclusion of these requirements in subcontracts.

10. Federal Changes

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between LexTran and FTA, as they may be amended or promulgated from time to

time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

11. Clean Air

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq . The Contractor agrees to report each violation to LexTran and understands and agrees that LexTran will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

The Clean Air requirements apply to all contracts exceeding $100,000, including indefinite quantities where the amount is expected to exceed $100,000 in any year. The Clean Air requirements flow down to all subcontracts which exceed $100,000.

12. Contract Work Hours and Safety Standards Act

(1) **Overtime requirements** - No contractor or subcontractor contracting for any part of the contract 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 of pay for all hours worked in excess of forty hours in such workweek.

(2) **Violation; liability for unpaid wages; liquidated damages** - In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and 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 paragraph (1) of this section, 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 paragraph (1) of this section.

(3) **Withholding for unpaid wages and liquidated damages** - LexTran 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 subcontractor under any such 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 such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

(4) **Subcontracts** - The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

This clause applies to construction contracts and, in very limited circumstances, non-construction projects that employ "laborers or mechanics on a public work." These non-construction applications do not generally apply to transit procurements because transit procurements (to include rail cars and buses) are deemed "commercial items". In all cases this clause only applies to contracts over $100,000.

13. No Government Obligation to Third Parties

(1) LexTran and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to LexTran, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

(2) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

14. Program Fraud and False or Fraudulent Statements and Related Acts

(1) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies", 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

(3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

15. Termination

a. Termination for Convenience (General Provision) LexTran may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the Government's best interest. The Contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit its termination claim to LexTran to be paid the Contractor. If the Contractor has any property in its possession belonging to LexTran, the Contractor will account for the same, and dispose of it in the manner LexTran directs.

b. Termination for Default [Breach or Cause] (General Provision) If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or, if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, LexTran may terminate this contract for default. Termination shall be effected by serving a notice of termination on the contractor setting forth the manner in which the Contractor is in default. The contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined by LexTran that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, LexTran, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.

c. Opportunity to Cure (General Provision) LexTran in its sole discretion may, in the case of a termination for breach or default, allow the Contractor an appropriately short period of time in which to cure the defect. In such case, the notice of termination will state the time period in which cure is permitted and other appropriate conditions.

If Contractor fails to remedy to LexTran's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within [ten (10) days] after receipt by Contractor of written notice from LexTran setting forth the nature of said breach or default, LexTran shall have the right to terminate the Contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude LexTran from also pursuing all available remedies against Contractor and its sureties for said breach or default.

d. Waiver of Remedies for any Breach In the event that LexTran elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this Contract, such waiver by LexTran shall not limit LexTran's remedies for any succeeding breach of that or of any other term, covenant, or condition of this Contract.

e. Termination for Convenience (Professional or Transit Service Contracts) LexTran, by written notice, may terminate this contract, in whole or in part, when it is in the Government's interest. If this contract is terminated, the Recipient shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

f. Termination for Default (Supplies and Service) If the Contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension or if the Contractor fails to comply with any other provisions of this contract, LexTran may terminate this contract for default. LexTran shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner or performance set forth in this contract.

If, after termination for failure to fulfill contract obligations, it is determined 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 for the convenience of LexTran.

g. Termination for Default (Transportation Services) If the Contractor fails to pick up the commodities or to perform the services, including delivery services, within the time specified in this contract or any extension or if the Contractor fails to comply with any other provisions of this contract, LexTran may terminate this contract for default. LexTran shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of default. The Contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in this contract.

If this contract is terminated while the Contractor has possession of LexTran goods, the Contractor shall, upon direction of LexTran, protect and preserve the goods until surrendered to LexTran or its agent. The Contractor and LexTran shall agree on payment for the preservation and protection of goods. Failure to agree on an amount will be resolved under the Dispute clause.

If, after termination for failure to fulfill contract obligations, it is determined 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 for the convenience of LexTran.

h. Termination for Default (Construction) If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will insure its completion within the time specified in this contract or any extension or fails to complete the work within this time, or if the Contractor fails to comply with any other provisions of this contract, LexTran may terminate this contract for default. LexTran shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. In this event, LexTran may take over the work and compete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to LexTran resulting from the Contractor's refusal or failure to complete the work within specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by LexTran in completing the work.

The Contractor's right to proceed shall not be terminated nor the Contractor charged with damages under this clause if-

1. the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include: acts of God, acts of LexTran, acts of another Contractor in the performance of a contract with LexTran, epidemics, quarantine restrictions, strikes, freight embargoes; and

2. the contractor, within [10] days from the beginning of any delay, notifies LexTran in writing of the causes of delay. If in the judgment of LexTran, the delay is excusable, the time for completing the work shall be extended. The judgment of LexTran shall be final and conclusive on the parties, but subject to appeal under the Disputes clauses.

If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of LexTran.

i. Termination for Convenience or Default (Architect and Engineering) LexTran may terminate this contract in whole or in part, for LexTran's convenience or because of the failure of the Contractor to fulfill the contract obligations. LexTran shall terminate by delivering to the Contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the Contractor shall (1) immediately discontinue all services affected (unless the notice directs otherwise), and (2) deliver to the Contracting Officer all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process.

If the termination is for the convenience of LexTran, the Contracting Officer shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services.

If the termination is for failure of the Contractor to fulfill the contract obligations, LexTran may complete the work by contact or otherwise and the Contractor shall be liable for any additional cost incurred by LexTran.

If, after termination for failure to fulfill contract obligations, it is determined 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 for the convenience of LexTran.

j. Termination for Convenience of Default (Cost-Type Contracts) LexTran may terminate this contract, or any portion of it, by serving a notice or termination on the Contractor. The notice shall state whether the termination is for convenience of LexTran or for the default of the Contractor. If the termination is for default, the notice shall state the manner in which the contractor has failed to perform the requirements of the contract. The Contractor shall account for any property in its possession paid for from funds received from LexTran, or property supplied to the Contractor by LexTran. If the termination is for default, LexTran may fix the fee,

if the contract provides for a fee, to be paid the contractor in proportion to the value, if any, of work performed up to the time of termination. The Contractor shall promptly submit its termination claim to LexTran and the parties shall negotiate the termination settlement to be paid the Contractor.

If the termination is for the convenience of LexTran, the Contractor shall be paid its contract close-out costs, and a fee, if the contract provided for payment of a fee, in proportion to the work performed up to the time of termination.

If, after serving a notice of termination for default, LexTran determines that the Contractor has an excusable reason for not performing, such as strike, fire, flood, events which are not the fault of and are beyond the control of the contractor, LexTran, after setting up a new work schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.

16. Government-Wide Debarment and Suspension (Nonprocurement)

This contract is a covered transaction for purposes of 2 CFR Part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)", 2 C.F.R. Part 180. As such, the contractor is required to verify that none of the contractor, its principals, as defined at 2 CFR 1200, or affiliates, as defined at 2 CFR 1200, are excluded or disqualified as defined at 2 CFR 1200.

The contractor is required to comply with 2 CFR 1200, and must include the requirement to comply with 2 CFR 1200 in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by LexTran. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to LexTran, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 CFR 1200 while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

This clause applies to all contracts over $25,000.

17. Privacy Act

The following requirements apply to the Contractor and its employees that administer any system of records on behalf of the Federal Government under any contract:

(1) The Contractor agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974,

5 U.S.C. § 552a. Among other things, the Contractor agrees to obtain the express consent of the Federal Government before the Contractor or its employees operate a system of records on behalf of the Federal Government. The Contractor understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying contract.

(2) The Contractor also agrees to include these requirements in each subcontract to administer any system of records on behalf of the Federal Government financed in whole or in part with Federal assistance provided by FTA.

18. Civil Rights Requirements

The following requirements apply to the underlying contract:

(1) Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

(2) Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract:

(a) Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor", 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity", as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity", 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(b) Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to

refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(c) Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act", 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(3) The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

Within Fayette County the Fairness Ordinance (no. 201-99) applies. This ordinance adds sexual orientation/gender identity as a protected class against discrimination in housing, employment and public accommodations.

In addition, the Contractor agrees to comply with any implementing requirements or applicable regulations the local government may issue.

19. Breaches and Dispute Resolution

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 LexTran's General Manager. This decision shall be final and conclusive unless within [ten (10)] days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the General Manager. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the General Manager shall be binding upon the Contractor and the Contractor shall abide be the decision.

Performance During Dispute - Unless otherwise directed by LexTran, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages - Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury of damage.

Remedies - Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between LexTran and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within Kentucky.

Rights and Remedies - The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties,

obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by LexTran, (Architect) or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

This clause applies to all contracts in excess of $100,000.

20. Disadvantaged Business Enterprise (DBE)

a. This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.* The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The agency's overall goal for DBE participation is **11.01 %.** Please refer to the scope of work section of this RFP for information on the specific DBE goal for this procurement, if any.

b. The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as LexTran deems appropriate. Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).

c. ***{If a separate contract goal has been established, use the following}*** Bidders/offerors are 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 concurrent with and accompanying an initial proposal:

1. The names and addresses of DBE firms that will participate in this contract. The subcontractors/suppliers must be eligible DBEs, i.e. they are currently certified as a DBE in Kentucky or can be certified prior to award;

2. A description of the work each DBE will perform with an indication of the percentage of work to be done by the DBE's own work forces, as compared with that which will be subcontracted by the DBE to other DBEs or non-DBEs;

3. The dollar amount of the participation of each DBE firm participating, including the dollar values of subcontracts to be awarded by the DBE subcontractor;

4. Written documentation of the bidder/offeror'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 prime contractor's commitment; and

6. If the contract goal is not met, evidence of good faith efforts to do so (see 28.1 below).

Proposers must present the information required above as a matter of responsiveness with initial proposals prior to contract award (see 49 CFR 26.53(3)).

{If no separate contract goal has been established, use the following} The successful bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.

d. The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the contractor's receipt of payment for that work from LexTran. In addition, is required to return any retainage payments to those subcontractors within 30 days after incremental acceptance of the subcontractor's work by LexTran and contractor's receipt of the partial retainage payment related to the subcontractor's work.

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

20.1 Good Faith Efforts

In order to be responsive, a bidder must make good faith efforts to meet the DBE participation goal set forth in the contract. The bidder must document the good faith efforts it made in that regard. Thus, the Bid submitted to the Authority must be accompanied by written documentation prepared by the bidder evidencing all of its sufficient and reasonable good faith efforts toward fulfilling the goal. These efforts must be active steps, and ones, which could reasonably be expected to lead to sufficient DBE participation to meet the contract DBE participation goal. Mere pro forma efforts are not acceptable and will be rejected by the DBE Officer.

Good Faith Efforts require that the bidder consider all qualified DBEs, who express an interest in performing work under the contract. This means that the bidder cannot reject a DBE as unqualified unless the bidder has sound reasons based on a thorough investigation of the DBE's capabilities. Further, the DBE's standing within its industry, membership in specific groups, organizations or associations and political or social affiliation (for example, union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the Contractor's efforts to meet the contract DBE participation goal.

The following list, which is not exclusive or exhaustive, sets forth the types of actions, which indicate good faith efforts on the part of a bidder to meet the DBE goal. The extent and type of actions required will vary depending on such things as industry practice; the time available for submitting a bid and the type of contract involved.

A. Attendance at a pre-bid meeting, if any, scheduled by the Authority to inform DBEs of subcontracting opportunities under a given solicitation.
B. Advertisement in general circulation media, trade association publications, and minority-focus media for at least twenty (20) days before bids are due. If 20 days are not available, publication for a shorter reasonable time is acceptable.
C. Written notification to capable DBEs that their interest in the contract is solicited.
D. Documentation of efforts to negotiate with DBEs for specific sub-contracts including at a minimum:
   1. The names, addresses, and telephone numbers of DBEs that were contacted and the date(s) of contact.
   2. A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.
   3. A statement explaining why additional agreements with DBEs were not reached.
E. For each DBE the bidder contacted but rejected as unqualified, the reason for the bidder's conclusion.
F. Documentation of efforts made to assist the DBEs contacted that needed assistance in obtaining bonding or insurance required by the bidder or the Authority.
G. Documentation of efforts to utilize the services of small business organizations, community and contractor groups to locate qualified DBEs.
H. Documentation that the bidder has broken out contract work items into economically feasible units in fields where there are available DBE firms to perform the work.
I. Evidence that adequate information was provided to interested DBEs about the plans, specifications and requirements of the contract, and that such information was communicated in a timely manner.
J. Documentation of any efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials or related assistance or services.

20.2 Good Faith Efforts Reconsideration

If it is determined that the apparent successful low bidders have failed to meet the requirements of the contract goal/good faith efforts, the Authority will provide them with ONE opportunity for administrative reconsideration, before the Authority awards the contract. This reconsideration will include the following:

A. The bidder will be permitted to either provide written evidence or to present oral argument at a pre-scheduled time that the documentation it submitted with its bid met the DBE goal and/or showed good faith efforts to do so. No new evidence of good faith efforts may be presented after the bid submission deadline.
B. The Authority's Reconsideration Officer will review the evidence presented by the bidder and issue a written determination that the bidder has: 1) met the DBE goal; 2) not met the DBE goal but has made adequate good faith efforts to do so; or 3) has not met the DBE goal and the good faith efforts made were not adequate.

C. The decision of the Authority's Reconsideration Officer is final and may not be appealed to the Authority, its funding agencies or the USDOT.
D. The Authority will not award a contract to any bidder who does not meet the contract DBE participation goal or show good faith efforts to meet that goal. Thus, it is essential that all bidders submit ALL relevant documentation concerning the DBE goal and/or good faith efforts in the envelope or package containing their sealed bid.

20.3 Counting DBE Participation Toward the Contract Goal

The inclusion of any DBE by the bidder in its bid documents shall not conclusively establish the bidder's eligibility for full DBE credit for the firm's participation in the contract. The amount of DBE participation credit shall be based upon an analysis by LexTran of the specific duties which will be performed by the DBE.

The bidder may count toward its DBE goal only expenditures to firms which are currently certified by the KY UCP and which perform a commercially useful function. A firm is considered to perform a commercially useful function when it is responsible for the performance of a distinct element of the work and carries out its responsibilities by actually performing, managing and supervising the work involved.

To determine whether a firm is performing a commercially useful function, the DBE Officer will evaluate the amount of work subcontracted, industry practices and other relevant factors. The DBE Officer reserves the right to deny or limit DBE credit to the bidder where any DBE is found to be engaged in substantial pass-through activities with others.

DBE participation shall be counted toward the DBE goal in the contract as follows:

A. Once a DBE is determined to be eligible in accordance with these rules, the total dollar value of the contract awarded to the DBE may be counted toward the DBE goal except as indicated below.
B. A bidder may count toward its DBE goal that portion of the total dollar value of a contract with an eligible joint venture equal to the distinct, clearly defined portion of the work of the contract that the DBE performs with its own forces.
C. Consistent with normal industry practices, a DBE may enter into subcontracts. If a DBE subcontracts more than thirty percent (30%) or a significantly greater portion of the work of the contract than would be expected on the basis of normal industry practices, the DBE shall be presumed not to be performing a commercially useful function. Evidence may be presented by the bidder involved to rebut this presumption.
D. When a DBE subcontracts a part of the work under the contract to another firm, the value of the subcontracted work may only be counted towards the DBE goal if the DBE's subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count towards the DBE goal.
E. The bidder may count one-hundred percent (100%) of its expenditures for materials and supplies required under the contract and which are obtained from a DBE manufacturer towards the DBE goal. The bidder may count sixty percent (60%) of its expenditures for material and supplies under the contract obtained from a DBE regular dealer towards its

DBE goal. The terms "manufacturer" and "regular dealer" are defined in 49 C.F.R. Part 26.55(e)(1)(ii) and (2)(ii).

F. The bidder may count towards its DBE goal expenditures to DBEs which are not manufacturers or regular dealers, such as fees or commissions charged for services and assistance in the procurement of essential personnel, facilities, equipment, materials or supplies and transportation charges as set forth in 49 C.F.R. Part 26. However, the DBE Officer must determine the fee or charge to be reasonable and not excessive as compared with fees or charges customarily allowed for similar services.
G. The bidder must use good business judgment when negotiating with subcontractors and take a DBE's price and capabilities into consideration. The fact that there may be some additional costs involved in finding and using DBE firms is not sufficient reason to fail to meet the DBE goal set forth in the contract, as long as such costs are reasonable.

20.4 Remedies

Failure to comply with the terms of this DBE clause is considered to be a breach of contract. If the contractor fails or refuses to comply in the time specified, LexTran will issue an order stopping all or part of payment/work until satisfactory action has been taken. If the contractor still fails to comply, LexTran may issue a termination for default proceeding.

In addition, the federal government has available several enforcement mechanisms that it may apply to firms participating in the DBE problem, including, but not limited to, the following:

1. Suspension or debarment proceedings pursuant to 49 CFR part 26
2. Enforcement action pursuant to 49 CFR part 31
3. Prosecution pursuant to 18 USC 1001.

20.5 DBE Program Definitions

A disadvantaged business enterprise is a business:

A. Which is at least 51% owned by one or more socially and economically disadvantaged individuals, or, in the case of any publicly-owned business, at least 51% of the stock of which is owned by one or more socially and economically disadvantaged individuals; and
B. Whose management and daily business operation are controlled by one or more of the socially and economically disadvantaged individuals who own it. OR
C. Which is at least 51% owned by one or more women individuals, or in the case of any publicly-owned business, at least 51% of the stock of which is owned by one or more women individuals; and
D. Whose management and daily business operations are controlled by one or more women individuals who own it.

"Small business concern" means a small business as defined by section 3 of the Small Business Act and Appendix B – Section 106(c) Determination of Business Size.

"Socially and economically disadvantaged individuals" means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and who are Black Americans,

Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans, or women, or any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to Section 8(a) of the Small Business Act.

A. "Black Americans" includes persons having origins in any of the Black racial groups of Africa.
B. "Hispanic Americans" includes persons of Mexican, Puerto Rican, Cuban, Central or South America, or other Spanish or Portuguese culture or origin, regardless of race.
C. "Native Americans" includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians.
D. "Asian Americans" includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, U.S. Trust Territories of the Pacific, and the Northern Marianas.
E. "Asian-Indian Americans" includes persons whose origins are from India, Pakistan, and Bangladesh.
F. "Women", regardless of race, ethnicity, or origin.
G. "Other" individuals found to be socially and economically disadvantaged by the Small Business Administration (SBA) pursuant to Section 8(a) of the Small Business Act.

21. Incorporation of Federal Transit Administration (FTA) Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1E are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any LexTran requests which would cause LexTran to be in violation of the FTA terms and conditions.

22. Non-Discrimination

The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or other such remedy as the recipient deems appropriate.

23. Transit Vehicle Manufacturer Compliance with DBE Requirements

Before a transit vehicle manufacturer (TVM) may submit a bid or proposal to provide vehicles to be financed with FTA assistance, 49 CFR Section 26.49 requires the TVM to submit a certification that it has complied with FTA's DBE requirements. The TVM shall certify in writing that it has complied with the requirements of 49 CFR Section 26.49.

24. Access for Individuals with Disabilities

LexTran and contractors are required to comply with 49 U.S.C. § 5301(d), which states the Federal policy that elderly individuals and individuals with disabilities have the same right as other individuals to use public transportation services and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities. LexTran and contractors are also required to comply with all applicable provisions of section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, which prohibits discrimination on the basis of disability in the administration of programs or activities receiving Federal financial assistance; with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 *et seq.*, which requires that accessible facilities and services be made available to individuals with disabilities; with the Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151 *et seq.*, which requires that buildings and public accommodations be accessible to individuals with disabilities; and with other laws and amendments thereto pertaining to access for individuals with disabilities that may be applicable. In addition, LexTran and contractors agree to comply with applicable implementing Federal regulations, and any later amendments thereto, and agrees to follow applicable Federal implementing directives, except to the extent FTA approves otherwise in writing. Among those regulations and directives are:

(1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37;

(2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27;

(3) Joint U.S. Architectural and Transportation Barriers Compliance Board (U.S. ATBCB)/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38;

(4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35;

(5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36;

(6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;

(7) U.S. EEOC, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;

(8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F;

(9) U.S. ATBCB regulations, "Electronic and Information Technology Accessibility Standards," 36 C.F.R. Part 1194;

(10) FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. Part 609; and

(11) Federal civil rights and nondiscrimination directives implementing the foregoing Federal laws and regulations, except to the extent the Federal Government determines otherwise in writing.

25. Payment of Subcontractors

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from LexTran. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of LexTran. This clause applies to both DBE and non-DBE subcontracts.

The Contractor is required to include, in each subcontract, a clause requiring the use of appropriate arbitration mechanisms to resolve all payment disputes.

LexTran will not pay the Contractor for work performed unless and until the Contractor ensures that the Subcontractors have been promptly paid for the work they have performed under all previous payment requests, as evidenced by the filing with LexTran of lien waivers, canceled checks (if requested), and the Contractor's sworn statement that it has complied with the prompt payment requirements. Prime Contractors must submit a prompt payment affidavit, (form to be provided by LexTran and reproduced below) which identifies each subcontractor (both DBE and non-DBE) and the date and amount of the last payment to such subcontractor, with every payment request filed with LexTran, except for the first payment request, on every contract with LexTran.

Failure to comply with these prompt payment requirements is a material breach of the Contract, which may lead to any remedies permitted under law, including, but not limited to, Contractor debarment.

Reporting Requirements During the Term of the Contract

The bidder shall within thirty (30) business days of contract award, or prior to any work being performed, execute formal subcontracts or purchase orders with the DBE firms included in the bid. These written agreements shall be made available to LexTran upon request. All contracts between the bidder and its subcontractors must contain a prompt payment clause as set forth in this section above.

During the term of annual contracts, the bidder shall submit regular "Status Reports of DBE Subcontract Payments" in a form acceptable to the Authority. The frequency with which these reports are to be submitted will be determined by LexTran, but in no event will reports be required less frequently than quarterly. In the absence of written notice from LexTran, the bidder's first "Status Report of DBE Subcontract Payments" will be due ninety (90) days after the date of contract award, with additional reports due quarterly thereafter.

In the case of a one-time procurement with either a single or multiple deliveries, a "Status Report of DBE Subcontract Payments", in a form acceptable to the Authority, indicating final DBE payments shall be submitted directly to LexTran. The information must be submitted prior to or at the same time as the bidder's final invoice to the Authority. Failure to follow these directions may delay final payment.

PROMPT PAYMENT AFFIDAVIT

Contractor will place a check in the appropriate box below that applies to this payment request.

Re: Payment Request No. _____

I, _____ (Name), the _____ (Title - e.g., President, Vice President, etc.) of _____ ("Company"), do state the following with regard to payments made under Contract No. _____ ("Contract"):

1. ____Subcontractors, at the first tier, both DBE and non-DBE, who completed work and were listed for payment on the prior Payment Request No. _____, were paid no later than thirty (30) business days after Company received payment from LexTran.
2. ____Copies of invoices and cancelled checks for subcontractors at the first tier who were paid under the prior payment request have been delivered or mailed to the DBE Department. In addition, Company has attached to the current Payment Request all lien waivers for prior subcontractor payments and any other documentation required by LexTran. (Failure to attach all required documentation to the Payment Request or forward cancelled checks and invoices to the LexTran DBE Department may cause the Payment Request to be rejected by LexTran.)
3. ____All retainage amounts withheld from any subcontractor who satisfactorily completed its portion of the contract work, including punch list items, were paid to the subcontractor(s) no later than thirty (30) business days after it satisfactorily completed its work, whether or not LexTran has paid said retainage amounts to Company. Attach a copy of the cancelled check evidencing payment of each retainage amount.
4. ____There was no delay in or postponement of any payment owed to a subcontractor, whether periodic payment or retainage amount, except for good cause and after receipt of prior written approval from the LexTran Purchasing Agent.

Attach a copy of the written approval from the LexTran Purchasing Agent.

_____
Company Name

_____
Signature

_____
Print Name

Date: _____

Subscribed and sworn to before me this _____day of _____ 20__.

_____
Notary Public

26. Insurance

Insurance: The contractor shall procure or maintain for the duration of any contact issued pursuant to this bid a policy or policies of insurance for the protection of the contractor. The Authority requires certification of insurance coverage from all vendors, contractors/subcontractors prior to commencing work.

Contractor shall provide and maintain, and shall require subcontractors, if any, to provide and maintain, with forms and insurers acceptable to LexTran and having a Best Rating of not less than A+ (or another rating acceptable to the city) for the following insurance coverage's:

(a) Insurance protection for Contractor's employees to the extent required by the Workers' Compensation Law of the states where this work will be performed and where same is not applicable or if necessary to provide a defense to LexTran, Employers Liability Protection (covering both LexTran and Contractor) for Contractor's employees for no less than $1,000,000 per employee.

(b) If applicable, Longshoremen's & Harbor Workers' Compensation Act Insurance Coverage imposed by federal statutes having jurisdiction of Contractor's employees while engaged in the performance of the services. The policy shall have a limit of no less than $1,000,000.

(c) Commercial General Liability Insurance, written on an occurrence basis only with a combined single limit of no less than $1,000,000 per occurrence. This insurance shall include coverage for bodily injury, broad form property damage, (including completed operations), personal injury (including contractual and employee acts), blanket contractual, contractor's protective, and products and completed operations. Further, the insurance shall include coverage for the hazards commonly referred to as XCU (explosion, collapse and underground). This coverage should be obtained if the contract involves blasting, excavating, tunneling or other underground work. Said insurance shall contain a severability of interest's provision. The products and completed operations coverage shall extend for (2) years past acceptance, cancellation, or termination of Services.

(d) Business Automobile Liability Insurance with a combined single limit for bodily injury and property damage of no less than $1,000,000 per occurrence, with respect to all vehicles used in performance of the services, whether owned, non-owned, leased, hired or assigned.

(e) If applicable, Aircraft Public Liability Insurance, covering fixed wing and rotorcraft aircraft, whether owned, non-owned, leased, hired or assigned with a combined single limit for bodily injury and property damage, including passenger liability coverage of no less than $5,000,000.

(f) If applicable, Builders Risk Insurance in the amount of 100 percent of the contract amount of the building or buildings to be constructed. Unless otherwise specified, the Contractor shall provide and maintain a builders risk policy inclusive of fire, extended coverage, vandalism and malicious mischief insurance. The policy will cover the interest of LexTran and the contractor and a certificate of insurance evidencing such coverage shall be secured and presented to LexTran prior to the start of construction.

The policies required by this section shall be endorsed to include LexTran as additional insured's and shall stipulate that the insurance shall be primary insurance and that any insurance carried by LexTran, its directors, officers, public officials or employees shall not be contributory insurance.

Contractor and its insurers providing the required coverage's shall waive all rights of recovery against LexTran and its directors, officers, public officials, employees and agents.

Prior to commencing any services under this contract, Contractor will furnish LexTran with certificates of insurance issued by Contractor's insurer(s), as necessary, in a form acceptable to LexTran, as evidence that the insurance policies, including all applicable endorsements, providing the required coverage's, conditions, and limits required by the section are in full force and effect. LexTran also reserves the right to request and receive certified copies of any and all such Insurance policies and or endorsements.
LexTran shall not be obligated however to review such insurance certificates, policies and endorsements, or to advise Contractor of any deficiencies in such documents, and such receipt shall not relieve Contractor from or be deemed a waiver of LexTran's right to insist on strict fulfillment of Contractor's obligations herein. Contractor's Certificates of Insurance shall provide for no less than thirty days advance notice of cancellation, termination or alteration. All such certificates, endorsements and notices shall be sent directly to LexTran.

27. Indemnification

In matters under the sole control of the contractor the Contractor agrees to protect, defend, indemnify and hold the Authority, its officers, employees and agents free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees (including attorney's fees) or other expenses or liabilities of every kind and character arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings or causes of action of every kind and character in connection with or arising directly or indirectly out of this agreement and/or the performance hereof. Without limiting the generality of the foregoing, any and all such claims, etc., relating to personal injury, infringement of any patent, trademark, copyright (or application for any thereof) or of any other tangible or intangible personal or property right, or actual or alleged violation of any other tangible or intangible personal or property right, or actual or alleged violation of any applicable statute, ordinance, administrative order, rule or regulation, or decree of any court, shall be included in the indemnity hereunder. The contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, etc., at his/her sole expense and agrees to bear all other costs and expenses related thereto, even if such claim is groundless, false or fraudulent.

28. Disclaimer of Liability

The Authority will not hold harmless or indemnify any contractor for any liability whatsoever, except those arising out of circumstances under the sole control of the Authority or where it is determined there is a shared liability.

29. Safety

All practices, materials, supplies, and equipment shall comply with the Federal Occupational Safety and Health Act, as well as any pertinent Federal, State and/or local safety or environmental codes.

30. Governing Law

All contractual agreements shall be subject to, governed by, and construed according to the laws of the Commonwealth of Kentucky.

31. Licenses and Permits

The successful Contractor shall be appropriately licensed for the work required as a result of the contract. The cost for any required licenses or permits shall be the responsibility of the Contractor. Contractor is liable for any and all taxes due as a result of the contract.

32. Assignment/Transfer of Interest

There shall be no assignment/transfer of interests or delegation of Contractor's or Authority's rights, duties, or responsibilities of Contractor under the contract derived from this Bid without the prior written approval of the/all contracting parties.

33. Regulatory Requirements

The Contractor shall comply with all Federal, State, and local licensing and/or regulatory requirements (including permits) for the provision of transit services.

34. Severability

In the event any provision of the contract is declared or determined to be unlawful, invalid or unconstitutional, such declaration shall not affect, in any manner, the legality of the remaining provisions of the contract and each provision of the contract will be and is deemed to be separate and severable from each other provision.

35. Covenant Against Gratuities

If awarded the contract the contractor will warrant that he/she has not offered or given gratuities (in the form of entertainment gifts, or otherwise) to any official or employee of the Authority with a view toward securing favorable treatment in the award, amendment or performance evaluation of the contract.

36. Approved Equal

In all cases, materials must be furnished as specified. Where brand names or specific items are used in specifications, consider the term "or approved equal" to follow. Any unapproved deviations, exceptions, substitutions, alternates, or conditional qualifications contained in a bid

may be cause for its rejection. If a potential Bidder feels that his product is an equal to the product specified, he must submit a written request to the Authority. Requests for approved equals, clarification of specifications, and protest of specifications must be received by the Authority in writing fourteen (14) days before the time of the bid opening to allow analysis of the request.

Any request for any approved equal or protest of the specifications must be fully supported with catalog information, specifications and illustrations or other pertinent information as evidence that the substitute offer is equal to or better than the specification's requirement. Where an approved equal is requested, the Contractor must demonstrate the equality of his product to the Agency and must furnish sufficient information to enable the Agency to determine whether the Contractor's product is or is not equal to that specified.

The Authority's replies to requests under this section above will be delivered, (via email, fax or other agreed-upon method) at least seven days before the date scheduled for bid opening.

37. Single Proposal Response

If only one proposal is received in response to the request for proposals, a detailed cost proposal may be requested of the single proposer. A cost/price analysis and evaluation and/or audit may be performed of the cost proposal in order to determine if the price is fair and reasonable.

38. Eligibility for Award

In order to be eligible for award, offerers must be responsive and responsible.

a. Responsive offers are those complying in all material aspects of the solicitation, both as to the method and timeliness of submission and as to the substance of the resulting contract. Offers which do not comply with all the terms and conditions of the solicitation may be rejected as non-responsive.

b. Responsible offerers are those prospective contractors who must at a minimum: (1) have adequate financial resources or the ability to obtain such resources as required during performance of the contract; (2) are able to comply with the required or proposed delivery or performance schedule, taking into consideration all existing business commitments; (3) have a satisfactory record of past performance; (4) have necessary technical capability to perform.

39. Prohibited Interest

No member, officer, or employee of the public body, commission, or locality during their tenure or for one year thereafter will have any interests direct or indirect in this contract or the proceeds thereof.

40. Interest of Member or Delegates to Congress

No member of or delegate to the Congress of the United States will be admitted to any share or part of this contract or to any benefit arising therefrom.

41. Non-Collusion

The proposer guarantees that the proposal submitted is not a product of collusion with any other proposer and no effort has been made to fix the price of any proposal or to fix any overhead, profit or cost element of any proposed price.

42. Pricing

The price to be quoted in any proposal submitted shall include all labor, materials, tools, equipment, and other costs necessary to fully complete the manufacture, delivery and installation of the item pursuant to the specifications. Anything omitted from such specifications which are clearly necessary for the completion of the item and its appurtenances shall be considered a portion of the proposal although not directly specified or called for in these specifications. All parts shall be new and in no case will used, reconditioned, or obsolete parts be accepted unless otherwise specified. Proposer should note discounts, if any.

43. Late Proposals and Modifications or Withdrawals

Proposals received after the deadline designated in this RFP document shall not be considered and shall be returned unopened. The only exception to this policy shall be if it is demonstrated that the actions of Lextran personnel were responsible for the delay in the receipt of the proposal. Proposals may be withdrawn or modified prior to the submission deadline. All such transactions must be submitted in writing and received prior to the submission deadline.

44. Protest Procedures

Protests will only be accepted from prospective bidders whose direct economic interest would be affected by the award of a contract to the refusal to award a contract. The Procurement Manager will receive and then forward all bid protests to the General Manager who will consider the protest, whether submitted before or after the award of a contract. The only exception to this procedure is in the case where the selection of a management company is involved; in this instance the protests will be forwarded to the Chairman of the Authority Board. If oral objections are raised and then cannot be resolved, the protest must then be made in writing before any further consideration can be given.

Protests must be concise, logically arranged, and clearly state the grounds for protest. Protests must include, at least, the following information:

- Name, address, and telephone number of protester
- Identification of the solicitation
- A detailed statement of the legal and factual grounds of the protest
- A statement as to what relief is requested

All protests documents received shall be stamped with the date and time by the Procurement manger and logged into a protest file.

LexTran will respond, in detail, to each substantive issue raised in the protest. LexTran's determination will be final. LexTran will allow a request for reconsideration if data becomes available that was not previously known, or there has been an error of law or regulation.

Protests Before Award: Protests before award must be submitted within the time frame as specified below. If the written protest is not received by the time specified, the evaluation process shall continue in the normal manner, unless the General Manager upon investigation finds that remedial action is desirable, in which event such action shall be taken.

The protests addressing the adequacy of invitation for Bids, RFPs, including, without limitation, the pre-award procedure, the instructions to Bidders, General Terms and Conditions, Specifications and Scope of work must be filed at 109 West Loudon Avenue, Lexington, KY 40508 no later than three days before bid date. Thereafter, such issues are deemed waived by all interested parties.

Notice of a protest and the basis therefore shall be given to all bidders or offerers. In addition, when a protest against the making of an award is received, and the General Manager determines to withhold the award pending disposition of the protest, the bidders (whose bids might become eligible for award) shall be requested, before expiration of the time for acceptance of their bids, to extend the time for acceptance (with consent of sureties, if any) to avoid the need for re-advertising.

A written protest against the making of an award must be received by the Procurement Manager, at least, ten (10) days prior to the scheduled contract award date.

Where written protest against the making of an award is received, award shall not be made until five (5) days after the matter is resolved, unless the General Manager determines that:

- The items to be procured are urgently required; or
- Delivery or performance will be unduly delayed by failure to make the award promptly; or
- Failure to make prompt award will otherwise cause undue harm to the Authority or the State or the Federal Government.

In the event the General Manager determines that the award is to be made during the five-day period or during the pendency of a protest, he or she shall notify FTA prior to making such award. FTA reserves the right not to participate in such procurement.

If award is made, the Authority shall document the file to explain the need for an award and shall give written notice of the decision to proceed with the award to the protester and, as appropriate, to others concerned.

Protest After Award: Protest against award must be filed at the Authority's office within five (5) days immediately following the award. The protest shall be received by the Procurement Manager. However, although the number of persons involved in or affected by the filing of a protest may be limited in instances where an award has been made, the Contractor shall in any

event be furnished with the notice of protest and the basis therefore. Also, when it appears likely that an award may be invalidated and a delay in receiving the supplies or service is not prejudicial to the Authority's interest, the General Manager shall consider a mutual agreement with the contractor to suspend performance on a no-cost basis.

Decision on the Protest: The General Manager shall render his or her decision in writing within fourteen (14) days from the receipt of the written protest and shall provide notice of such decision to all interested parties.

Following an adverse decision by the General Manager, the Protestor may file a protest with the Federal Transit Administration (FTA).

FTA's Review of Protests: FTA will only review protests regarding the alleged failure of the authority to have written protest procedures or alleged failure to follow such procedures.

Alleged violations on other grounds are under the jurisdiction of the appropriate State or local administrative or judicial authorities. Alleged violations of a special Federal requirement that provides an applicable complaint procedure shall be submitted and processed in accordance with that Federal regulation. See, e.g., Buy America Requirements, 49 CFR Part 661 (Section 661.15); Participation by Minority Business Enterprise in Department of Transportation Programs, 49 CFR Section 23.73.

FTA will only review protests submitted by an interested party as defined below.

FTA's Remedy: FTA's remedy for the Authority's failure to have written protest procedures or failure to follow such procedure is limited to requiring the Authority to develop such procedures, if necessary, and follow such procedures in reviewing the protest at issue, if the Authority desires FTA financial participation in the contract in question. In instances where the Authority has awarded to another bidder or offerer, or prior to FTA's decision on the protest, FTA may refuse to participate in funding the contract.

Definitions: For the purposes of this section, the following definitions apply:

- "Days" refers to working days of the Federal Government.
- "File" or "submit" refers to the date of receipt by the General Manager or RTA, as the case may be.
- "Interested party" means an actual or prospective bidder or offerer whose direct economic interest would be affected by the award of the contract or by failure to award the contract.

Time for Filing with FTA: Protestors shall file a protest with FTA no later than five (5) days after a final decision is rendered under protest procedure. In instances where the protestor alleges that the Authority failed to make a final determination on the protest, protestors shall file a protest with FTA no later than five (5) days after the protestor knew or should have known of Authority failure to render a final determination on the protest. The Authority shall not award a contract for five (5) days following its decision on a bid protest except in accordance with the

provisions and limitations set forth above. After five (5) days, the Authority shall confirm with FTA that FTA has not received a protest on the contract in question.

Submission of Protest to FTA:

- Protests should be filed with the appropriate FTA Regional Office with a concurrent copy to: The Transit Authority of Lexington
  109 West Loudon Avenue
  Lexington, KY 40508
- The protest filed with FTA shall:
  1. Include the name and address of the protestor;
  2. Identify the authority (the FTA grantee), project number (if applicable) and the number of the contract solicitation;
  3. Contain a statement of the grounds for protest and any supporting documentation. This should detail the alleged failure to follow protest procedures or the alleged failure to have procedures, and be fully supported to the extent possible; and
  4. Include a copy of the local protest filed with the Authority and a copy of the Authority's decision, if any.

Authority's Response:

- FTA shall notify the Authority in a timely manner of the receipt of a protest. FTA shall instruct the Authority to notify the contractor of the protest if an award has been made or, if no award has been made, to notify all interested parties. The Authority shall instruct all who receive such notice that they may communicate further directly with FTA.
- The Authority shall submit the following information to FTA no later than ten (10) days after receipt of notification by FTA of the protest:
  1) A copy of the protest procedure;
  2) A description of the process followed concerning the protestor's protest; and
  3) Any supporting documentation.
- The Authority shall provide the protestor with a copy of the above submission to FTA.

Protestor's Comments: The protestor must submit any comments on the Authority's submission no later than ten (10) days after the protestor's receipt of submission.

Withholding of Award: When a protest has been timely filed with the Authority before award, the Authority shall not make an award prior to five (5) days after the resolution of the protest, or if a protest has been filed with FTA, during the pendency of that protests, unless the Authority determines that:

- The items to be procured are urgently required;
- Delivery or performance will be unduly delayed by failure to make the award promptly; or
- Failure to make prompt award will otherwise cause undue harm to the Authority or the Federal Government.
- In the event that the Authority determines that the award is to be made during the five-day period following the local protest decision or pendency of a protest, the Authority shall notify FTA prior to making such award. FTA will not review the sufficiency of the Authority's determination to award during the pendency of a protest prior to FTA's bid

protest decision. FTA reserves the right not to participate in the funding of any contract awarded during the pendency of a protest.

FTA's Action: Upon receipt of the submission, FTA will either request further information or a conference among the parties, or will render a decision on the protest.