

<b>REQUEST FOR PROPOSAL</b> DOTRFP-11 Rev. 8/19 <b>Mary Matuszak</b> <i>Fiscal Admin. Supervisor</i> <b>(860) 594-2342</b> <i>Telephone Number</i> <u><a href="mailto:mary.matuszak@ct.gov">mary.matuszak@ct.gov</a></u> <i>E-Mail Address</i>	<b>STATE OF CONNECTICUT</b> <b>DEPARTMENT OF TRANSPORTATION (CTDOT)</b> <b>Division of Operations &amp; Support – Business Services &amp; Inventory Management</b> <b>2800 Berlin Turnpike</b> <b>Newington, CT 06111</b>	<b>RFP Number:</b> 19DOT7000
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**NOTICE TO VENDORS:**

To automatically receive notification of new Bids & RFP's and Addenda from BizNet, the State of Connecticut's Contracting Portal via e-mail click on the following link. Review the Overview; click on How To on the left side of the screen and follow the instructions to create your BizNet account.

**<https://portal.ct.gov/DAS/Procurement/Contracting/DAS-Procurement-BizNet-Accounts>**

**Request for Proposal (RFP)**  
*SPECIFICATIONS & PROPOSAL DOCUMENTS ATTACHED*

**DESCRIPTION: 35' and 40' Low Floor, Heavy-Duty Battery Electric Powered Transit Buses**

**DELIVERY OF PROPOSALS**

If the proposal is sent via **A COMMERCIAL EXPRESS CARRIER**, please address proposal as follows:  
 The Department of Transportation  
 Attn: Mary Matuszak – 2418 SW  
 2800 Berlin Turnpike  
 Newington, CT 06111

If the proposal is sent via **U. S. MAIL**, please address proposal as follows:  
 The Department of Transportation  
 Attn: Mary Matuszak – 2418 SW  
 P.O. Box 317546  
 Newington, CT 06131-7546

If the proposal is being **HAND CARRIED**, please deliver to:  
 The Department of Transportation  
 2800 Berlin Turnpike  
 Newington, CT  
 Security Desk – Ask for Mary Matuszak at extension 2342  
 (Receipt of hand delivered Proposals prior to RFP Due Date, can be made between 8:00 a.m. and 3:00 p.m., Monday through Friday excluding State Holidays. In the event that the Proposal is delivered on the RFP Due Date, it must be received prior to 2:00 p.m., Eastern Time

Allow sufficient time if responding by mail. Mailing your response to CTDOT, Business Services & Inventory Management is preferred. If hand-delivering your response, see above instructions. Vendors cannot enter buildings without a valid photo ID.

**NOTE: Responses WILL NOT be accepted after specified RFP Due Date & Time**

**USE LABEL BELOW ON ALL PACKAGES WHEN RETURNING YOUR RESPONSE**

**SEALED RFP NO. 19DOT7000**  
**RFP DUE DATE/TIME: October 30, 2019 at 2:00 pm, Eastern Time**

Department of Transportation  
 Business Services & Inventory Management – 2416 SW2  
 Attn: Mary Matuszak

**MAILROOM: DO NOT OPEN - RFP**

# STATE OF CONNECTICUT

## DEPARTMENT OF TRANSPORTATION

**Mary Matuszak**  
Fiscal Admin. Supv.  
**(860) 594-2342**  
Telephone Number

RFP NO. <b>19DOT7000</b>
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**Read & Complete**  
**Carefully**

RFP NO: <b>19DOT7000</b>	RFP DUE DATE: <b>30 October 2019</b>	RFP DUE TIME: <b>2:00 PM</b>	RFP SURETY: <b>\$0.00</b>	DATE ISSUED: <b>28 August 2019</b>
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DESCRIPTION: **35' and 40' Low Floor Heavy-Duty Battery Electric Powered Transit Buses**

FOR: <b>Connecticut Department of Transportation (CTDOT)</b>	TERM OF CONTRACT: <b>Two (2) Years From Execution of Contract</b>
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**REQUEST FOR PROPOSAL:** Pursuant to the provisions of Section 13b-34 of the Connecticut General Statutes as amended, Business Services & Inventory Management is soliciting proposals for CTDOT, for the furnishing of the subject commodities and/or services.

**IMPORTANT:** ALL pages of this form, Sections 1 through 3 must be completed, signed and returned by the Proposer as part of the proposal package. Failure to submit all pages of this form may constitute grounds for rejection of your proposal.

Section 1 of 3 - PROPOSER INFORMATION

COMPLETE PROPOSER LEGAL BUSINESS NAME:	Taxpayer ID # (TIN): <input type="checkbox"/> SSN <input type="checkbox"/> FEIN
PRINCIPAL PLACE OF BUSINESS:	WRITE/TYPE SSN/FEIN NUMBER ABOVE
BUSINESS NAME , TRADE NAME, DOING BUSINESS AS (IF DIFFERENT FROM ABOVE)	
PRINCIPAL PLACE OF BUSINESS (IF DIFFERENT FROM ABOVE)	
BUSINESS ENTITY: <input type="checkbox"/> LLC <input type="checkbox"/> NON-PROFIT <input type="checkbox"/> PARTNERSHIP <input type="checkbox"/> INDIVIDUAL/SOLE PROPRIETORSHIP (ATTACH NAMES AND TITLES OF ALL PARTNERS)	
<input type="checkbox"/> CORPORATION TYPE OF CORPORATION: -	STATE ORGANIZED IN:
<b>NOTE: IF INDIVIDUAL/SOLE PROPRIETOR, INDIVIDUAL'S NAME (AS OWNER) MUST APPEAR IN THE LEGAL BUSINESS NAME BLOCK ABOVE.</b>	
BUSINESS TYPE:    A. SALE OF COMMODITIES    B. MEDICAL SERVICES    C. ATTORNEY FEES    D. RENTAL OF PROPERTY (REAL ESTATE & EQUIPMENT)	
E. OTHER (DESCRIBE IN DETAIL)	
UNDER THIS TIN, WHAT IS THE PRIMARY TYPE OF BUSINESS YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE)	
UNDER THIS TIN, WHAT OTHER TYPES OF BUSINESS MIGHT YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE)	
WRITTEN SIGNATURE OF PERSON AUTHORIZED TO SIGN PROPOSALS ON BEHALF OF THE ABOVE NAMED PROPOSER	DATE EXECUTED
← SIGN HERE	
TYPE OR PRINT NAME OF AUTHORIZED PERSON	TITLE OF AUTHORIZED PERSON

Mary Matuszak  
Fiscal Admin. Supv.  
(860) 594-2342  
Telephone Number

# STATE OF CONNECTICUT

## DEPARTMENT OF TRANSPORTATION

RFP NO.  
19DOT7000

**Read & Complete  
Carefully**

Section 1 of 3 - PROPOSER INFORMATION (CONTINUED)

PROPOSER ADDRESS	STREET	CITY	STATE	ZIP CODE
Add Additional Business Address information on back of this form, if needed.				

PROPOSER E-MAIL ADDRESS	PROPOSER WEB SITE
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**REMITTANCE INFORMATION: INDICATE BELOW THE REMITTANCE ADDRESS OF YOUR BUSINESS.**  SAME AS PROPOSER ADDRESS ABOVE.

REMIT ADDRESS	STREET	CITY	STATE	ZIP CODE
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**Notice:** Provision pursuant to Section #37 of DOT-50, Notice, for all communications as required by Section #37 of DOT-50 of 19DOT7000, provide the Proposer Contact Information below.

PROPOSER CONTACT INFORMATION: NAME (TYPE OR PRINT)

PROPOSER ADDRESS	STREET	CITY	STATE	ZIP CODE
Add Additional Proposer Contact & Address information on back of this form, if needed.				

1ST BUSINESS PHONE:	Ext. #	EMAIL ADDRESS:
2ND BUSINESS PHONE:	Ext. #	WEBSITE ADDRESS:
CELLULAR:	FAX NUMBER:	

IS YOUR BUSINESS CURRENTLY A DAS CERTIFIED SMALL BUSINESS ENTERPRISE?  YES (ATTACH CERTIFICATE COPY TO BID)  NO

IF YOU ARE A STATE EMPLOYEE, INDICATE YOUR POSITION, AGENCY & AGENCY ADDRESS.

**FOR PURCHASE ORDER DISTRIBUTION: 1) CHECK ONLY ONE BOX BELOW 2) INPUT E-MAIL ADDRESS OR FAX # (IF CHECKED)**

E-MAIL  FAX  USPS MAIL  EDI

**If EDI was selected, give us a person to contact in your company to set up EDI:**

NAME:	
E-MAIL ADDRESS:	
TELEPHONE NUMBER:	

**FOR REQUEST FOR QUOTATION (RFQ) DISTRIBUTION: 1) CHECK ONLY ONE BOX BELOW 2) INPUT E-MAIL ADDRESS OR FAX # (IF CHECKED)**

E-MAIL  FAX  USPS MAIL

**ADD FURTHER BUSINESS ADDRESS, E-MAIL & CONTACT INFORMATION BELOW OR ON BACK OF FORM IF NEEDED**

PROPOSAL  
DOTRFP-26 Rev. 7/19

Mary Matuszak  
Fiscal Admin. Supv.

(860) 594-2342  
Telephone Number

**STATE OF CONNECTICUT**  
**DEPARTMENT OF TRANSPORTATION**

RFP NO. 19DOT7000
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**Read & Complete**  
**Carefully**

Page 3 of 3

Section 2 of 3 - PROPOSER DEBARMENT AND/OR SUSPENSION
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Has the Proposer, any company official, or any subcontractor to the Proposer, received any notices of debarment and/or suspension from contracting with the State of Connecticut, the Federal Government or any governmental entity?

YES  NO

The abovesigned Proposer further affirms and declares that neither the Proposer and/or any company official nor any subcontractor to the Proposer and/or any company official has received any notices of debarment and/or suspension from contracting with other states within the United States.

YES  NO

If the abovesigned Proposer, any company official or any subcontractor to the Proposer *has* received notices of debarment and/or suspension from contracting with the State of Connecticut, the Federal Government or any governmental entity, said notices must be attached to this document when submitting this proposal.

Number of notices attached \_\_\_\_\_

# STATE OF CONNECTICUT

## PROPOSER'S STATEMENT OF QUALIFICATIONS

RFP Number:  
19DOT7000

THIS FORM WILL BE USED IN ASSESSING QUALIFICATIONS. ATTACH ADDITIONAL SHEETS IF NECESSARY.

COMPANY NAME: \_\_\_\_\_  
&  
ADDRESS: \_\_\_\_\_

NUMBER OF YEARS COMPANY HAS BEEN ENGAGED IN BUSINESS UNDER THIS NAME: \_\_\_\_\_ YEARS

LIST OTHER NAMES YOUR COMPANY DOES BUSINESS AS: \_\_\_\_\_

LIST PREVIOUS COMPANY NAME(S): \_\_\_\_\_

IF APPLICABLE, LIST ANY CONTRACT AWARDS TO YOUR COMPANY BY THE STATE OF CONNECTICUT WITHIN THE LAST THREE (3) YEARS **THAT YOU ACTUALLY PERFORMED SERVICE AGAINST**. INDICATE WHICH STATE AGENCY, AND PROVIDE CONTRACT NAME AND NUMBER, AND THE NAME AND TELEPHONE NUMBER OF THE PURCHASING AGENT ADMINISTERING THE CONTRACT.

<u>CONTRACT NO.</u>	<u>CONTRACT NAME</u>	<u>STATE AGENCY</u>	<u>PURCHASING AGENT</u>	<u>TEL. NO.</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

LIST ANY OTHER CONTRACT AWARDS TO YOUR COMPANY BY THE STATE OF CONNECTICUT WITHIN THE LAST THREE (3) YEARS **THAT YOUR COMPANY DID NOT PERFORM ANY SERVICE AGAINST**. INDICATE WHICH STATE AGENCY, AND PROVIDE CONTRACT NAME AND NUMBER, AND THE NAME AND TELEPHONE NUMBER OF THE PURCHASING AGENT ADMINISTERING THE CONTRACT.

<u>CONTRACT NO.</u>	<u>CONTRACT NAME</u>	<u>STATE AGENCY</u>	<u>PURCHASING AGENT</u>	<u>TEL. NO.</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

LIST AT LEAST THREE (3) COMPLETED PROJECTS SIMILAR IN NATURE TO THIS **REQUEST FOR PROPOSAL** WHICH DEMONSTRATES YOUR COMPANY'S ABILITY TO PERFORM THE REQUIRED SERVICES.

<u>Company Name and Address</u>	<u>Telephone No.:</u>	<u>Dollar Value:</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

# STATE OF CONNECTICUT

## PROPOSER'S STATEMENT OF QUALIFICATIONS

RFP Number:  
19DOT7000

COMPANY NAME: \_\_\_\_\_

**REFERENCES:**

LIST AT LEAST THREE (3) COMPLETED PROJECTS SIMILAR IN NATURE TO THIS SOLICITATION WHICH DEMONSTRATES YOUR COMPANY'S ABILITY TO PERFORM THE REQUIRED SERVICES.

<u>COMPANY NAME AND ADDRESS</u>	<u>CONTACT PERSON NAME AND TELEPHONE NO.:</u>	<u>DOLLAR VALUE</u>
_____	_____	_____
_____	_____	_____

DETAILED CONTRACT/PROJECT DESCRIPTION: \_\_\_\_\_

(Attach additional sheets if necessary)

<u>COMPANY NAME AND ADDRESS</u>	<u>CONTACT PERSON NAME AND TELEPHONE NO.:</u>	<u>DOLLAR VALUE</u>
_____	_____	_____
_____	_____	_____

DETAILED CONTRACT/PROJECT DESCRIPTION: \_\_\_\_\_

(Attach additional sheets if necessary)

<u>COMPANY NAME AND ADDRESS</u>	<u>CONTACT PERSON NAME AND TELEPHONE NO.:</u>	<u>DOLLAR VALUE</u>
_____	_____	_____
_____	_____	_____

DETAILED CONTRACT/PROJECT DESCRIPTION: \_\_\_\_\_

(Attach additional sheets if necessary)



**EMPLOYMENT  
INFORMATION FORM  
(DOT-45)**

**STATE OF CONNECTICUT  
COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES (CHRO)  
WORKPLACE ANALYSIS AFFIRMATIVE ACTION REPORT  
EMPLOYMENT INFORMATION**

**RFP NUMBER:  
19DOT7000**

REV 1/09

Company Name	Contract Person	Phone Number	Date
Street Address			
City			
State			

Report all permanent full-time or part-time employees, including apprentice and on-the-job trainees. Enter the number on all lines and in all columns.

JOB CATEGORY	A OVERALL TOTALS (Sum of all columns, A-F Male & Female)		B WHITE (NOT OF HISPANIC ORIGIN)		C BLACK (NOT OF HISPANIC ORIGIN)		D HISPANIC		E ASIAN/PACIFIC ISLANDER		F AMERICAN INDIAN OR ALASKAN NATIVE	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Official/Managers												
Professionals												
Technicians												
Sales Workers												
Office/Clerical												
Craft Workers (Skilled)												
Operatives (Semi-skilled)												
Laborers (Unskilled)												
Service Workers												
TOTALS ABOVE												

Do you use minority business as subcontractors or suppliers?  Yes  No Explain:

Do you use an Affirmative Action Plan?  Yes  No Explain:

Describe your recruitment, hiring, training and promotion anti-discrimination practices.



# STATE OF CONNECTICUT - AGENCY VENDOR FORM

**IMPORTANT: ALL parts of this form must be completed, signed and returned by the vendor.**

**READ & COMPLETE CAREFULLY**

SP-26NB-IPDF Rev. 4/10

COMPLETE VENDOR LEGAL BUSINESS NAME		Taxpayer ID # (TIN): <input type="checkbox"/> SSN <input type="checkbox"/> FEIN	
WRITE/TYPE SSN/FEIN NUMBER ABOVE			
BUSINESS NAME, TRADE NAME, DOING BUSINESS AS (IF DIFFERENT FROM ABOVE)			
BUSINESS ENTITY: <input type="checkbox"/> CORPORATION <input type="checkbox"/> LLC CORPORATION <input type="checkbox"/> LLC PARTNERSHIP <input type="checkbox"/> LLC SINGLE MEMBER ENTITY <input type="checkbox"/> NON-PROFIT <input type="checkbox"/> PARTNERSHIP <input type="checkbox"/> INDIVIDUAL/SOLE PROPRIETOR    GOVERNMENT			
<b>NOTE: IF INDIVIDUAL/SOLE PROPRIETOR, INDIVIDUAL'S NAME (AS OWNER) MUST APPEAR IN THE LEGAL BUSINESS NAME BLOCK ABOVE.</b>			
BUSINESS TYPE:    A. SALE OF COMMODITIES    B. MEDICAL SERVICES    C. ATTORNEY FEES    D. RENTAL OF PROPERTY (REAL ESTATE & EQUIPMENT)			
E. OTHER (DESCRIBE IN DETAIL)			
UNDER THIS TIN, WHAT IS THE PRIMARY TYPE OF BUSINESS YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE) →			
UNDER THIS TIN, WHAT OTHER TYPES OF BUSINESS MIGHT YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE) →			
<b>NOTE: IF YOUR BUSINESS IS A PARTNERSHIP, YOU MUST ATTACH THE NAMES AND TITLES OF ALL PARTNERS TO YOUR BID SUBMISSION.</b>			
<b>NOTE: IF YOUR BUSINESS IS A CORPORATION, IN WHICH STATE ARE YOU INCORPORATED?</b>			
VENDOR ADDRESS		STREET	
		CITY	
		STATE	
		ZIP CODE	
Add Additional Business Address & Contact information on back of this form.			
VENDOR E-MAIL ADDRESS		VENDOR WEB SITE	
<b>REMITTANCE INFORMATION: INDICATE BELOW THE REMITTANCE ADDRESS OF YOUR BUSINESS.</b> <input type="checkbox"/> SAME AS VENDOR ADDRESS ABOVE.			
REMIT ADDRESS		STREET	
		CITY	
		STATE	
		ZIP CODE	
CONTACT INFORMATION: NAME (TYPE OR PRINT)			
1 <sup>ST</sup> BUSINESS PHONE:		Ext. #	HOME PHONE:
2 <sup>ND</sup> BUSINESS PHONE:		Ext. #	1 <sup>ST</sup> PAGER:
CELLULAR:		2 <sup>ND</sup> PAGER:	
1 <sup>ST</sup> FAX NUMBER:		TOLL FREE PHONE:	
2 <sup>ND</sup> FAX NUMBER:		TELEX:	
WRITTEN SIGNATURE OF PERSON AUTHORIZED TO SIGN PROPOSALS ON BEHALF OF THE ABOVE NAMED VENDOR			DATE EXECUTED
← SIGN HERE			
TYPE OR PRINT NAME OF AUTHORIZED PERSON		TITLE OF AUTHORIZED PERSON	
IS YOUR BUSINESS CURRENTLY A DAS CERTIFIED SMALL BUSINESS ENTERPRISE? <input type="checkbox"/> YES (ATTACH COPY OF CERTIFICATE) <input type="checkbox"/> NO			
IS YOUR BUSINESS CURRENTLY A CT DOT CERTIFIED DISADVANTAGED BUSINESS ENTERPRISE (DBE)? <input type="checkbox"/> YES <input type="checkbox"/> NO			
IF YOU ARE A STATE EMPLOYEE, INDICATE YOUR POSITION, AGENCY & AGENCY ADDRESS			
PURCHASE ORDER DISTRIBUTION: (E-MAIL ADDRESS)			
<b>NOTE: THE E-MAIL ADDRESS INDICATED IMMEDIATELY ABOVE WILL BE USED TO FORWARD PURCHASE ORDERS TO YOUR BUSINESS.</b>			

**ADD FURTHER BUSINESS ADDRESS, E-MAIL & CONTACT INFORMATION ON SEPARATE SHEET IF REQUIRED**

# Request for Taxpayer Identification Number and Certification

Give Form to the  
requester. Do not  
send to the IRS.

Print or type See Specific Instructions on page 2.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification; check only <b>one</b> of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <b>Note.</b> For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner. <input type="checkbox"/> Other (see instructions) ▶	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <i>(Applies to accounts maintained outside the U.S.)</i>
	5 Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
	6 City, state, and ZIP code	
	7 List account number(s) here (optional)	

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

**Note.** If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number								
				-				
OR								
Employer identification number								
				-				

## Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

<b>Sign Here</b>	Signature of U.S. person ▶	Date ▶
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## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at [www.irs.gov/fw9](http://www.irs.gov/fw9).

### Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
- Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

**Note.** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

**Example.** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

## Backup Withholding

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

**Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

## What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

## Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

## Penalties

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

## Specific Instructions

### Line 1

You must enter one of the following on this line; do not leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

**Note. ITIN applicant:** Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

**Line 2**

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

**Line 3**

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

**Limited Liability Company (LLC).** If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

**Line 4, Exemptions**

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

**Exempt payee code.**

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a) 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 <sup>1</sup>	Generally, exempt payees 1 through 5 <sup>2</sup>
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

<sup>1</sup> See Form 1099-MISC, Miscellaneous Income, and its instructions.

<sup>2</sup> However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

- A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)
- B—The United States or any of its agencies or instrumentalities
- C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)
- E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)
- F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state
- G—A real estate investment trust
- H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940
- I—A common trust fund as defined in section 584(a) J—A bank as defined in section 581
- K—A broker
- L—A trust exempt from tax under section 664 or described in section 4947(a)(1)
- M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

**Note.** You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

**Line 5**

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

**Line 6**

Enter your city, state, and ZIP code.

**Part I. Taxpayer Identification Number (TIN)**

**Enter your TIN in the appropriate box.** If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note.** See the chart on page 4 for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at [www.ssa.gov](http://www.ssa.gov). You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at [www.irs.gov/businesses](http://www.irs.gov/businesses) and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting [IRS.gov](http://IRS.gov) or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note.** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

**Part II. Certification**

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.

1. **Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.** You must give your correct TIN, but you do not have to sign the certification.
2. **Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.** You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.
3. **Real estate transactions.** You must sign the certification. You may cross out item 2 of the certification.
4. **Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).
5. **Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

**What Name and Number To Give the Requester**

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee The actual owner <sup>1</sup>
5. Sole proprietorship or disregarded entity owned by an individual	The owner <sup>3</sup>
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor <sup>4</sup>
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

<sup>3</sup> You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

<sup>4</sup> List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

\*Note. Grantor also must provide a Form W-9 to trustee of trust.

**Note.** If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

**Secure Your Tax Records from Identity Theft**

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.** Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to [phishing@irs.gov](mailto:phishing@irs.gov). You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: [spam@uce.gov](mailto:spam@uce.gov) or contact them at [www.ftc.gov/idtheft](http://www.ftc.gov/idtheft) or 1-877-IDTHEFT (1-877-438-4338).

Visit [IRS.gov](http://IRS.gov) to learn more about identity theft and how to reduce your risk.

**Privacy Act Notice**

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

<sup>1</sup> List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

<sup>2</sup> Circle the minor's name and furnish the minor's SSN.

**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION**

**RFP Number:  
19DOT7000**

2800 Berlin Turnpike  
Newington, CT 06111

**Certificate of Compliance with  
Connecticut General Statute Section 31 – 57b**

I hereby certify that all of the statements herein contained below have been examined by me and, to the best of my knowledge and belief, are true and correct.

The \_\_\_\_\_ **HAS / HAS NOT**  
*Company Name* (Cross-out non-applicable)

been cited for three (3) or more willful or serious violations of any Occupational Safety and Health Act (OSHA) or of an standard, order, or regulation promulgated pursuant to such act, during the three-year period preceding the RFP, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act of 1970, and not abated within the time fixed by the citation and such citation has not been set aside following appeal to the appropriate agency of court having jurisdiction or **HAS / HAS NOT** (Cross out non-applicable) received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the RFP.

The list of violations (if applicable) is attached.

**Signed:** \_\_\_\_\_  
*Name of Firm, Organization or Corporation*  
\_\_\_\_\_  
*Written Signature*

\_\_\_\_\_  
*Name (typed)* (Corporation Seal)

**Title:** \_\_\_\_\_  
*Title of Above Person, typed*

**Dated:** \_\_\_\_\_

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) *ss:* \_\_\_\_\_ A.D., 20 \_\_\_\_\_ )

Sworn to and personally appeared before me for the above, \_\_\_\_\_,  
*Name of Firm, Organization, Corporation*

Signer and Sealer of the foregoing instrument of and acknowledged the same to be the free act and deed of \_\_\_\_\_,  
\_\_\_\_\_, and his/her free act and deed as  
*Name of Person appearing in front of Notary or Clerk*

\_\_\_\_\_  
*Title of Person appearing in front of Notary or Clerk*

My Commission Expires: \_\_\_\_\_  
*Notary Public* (Seal)

## ACKNOWLEDGEMENT OF ADDENDA

The following form shall be completed and included in the Proposal.

Failure to acknowledge receipt of all addenda may cause the Proposal to be considered non-responsive to the solicitation. Acknowledged receipt of each addendum must be clearly established and included with the Proposal.

## ACKNOWLEDGEMENT OF ADDENDA

The undersigned acknowledges receipt of the following addenda to the Request for Proposals (RFP):

Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____

**Proposer:**

\_\_\_\_\_  
**Name**

\_\_\_\_\_  
**Street Address**

\_\_\_\_\_  
**City, State, Zip Code**

\_\_\_\_\_  
**Signature of Authorized Signer**

\_\_\_\_\_  
**Title**

\_\_\_\_\_  
**Phone**

# Request for Proposal #19DOT7000

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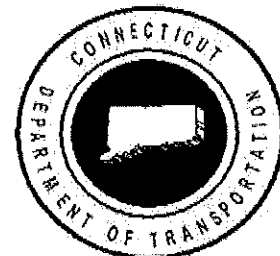
## 35' and 40' Low Floor, Heavy-Duty Battery Electric Powered Transit Buses

CTDOT Contact: **Mary Matuszak, Fiscal Administrative Supervisor**

Date Issued: August 28, 2019

Due Date: October 30, 2019

**Department of Transportation**





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# Request for Proposal #19DOT7000

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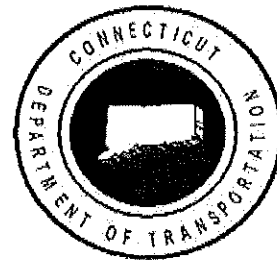
## 35' and 40' Low Floor, Heavy-Duty Battery Electric Powered Transit Buses

CTDOT Contact: **Mary Matuszak, Fiscal Administrative Supervisor**

Date Issued: **August 21, 2019**

Due Date: **October 23, 2019**

**Department of Transportation**



## TABLE OF CONTENTS

**NOTE:** This Table of Contents has been prepared for the convenience of those using this contract with the sole express purpose of quickly locating the information contained herein; and no claims shall arise due to omissions, additions, deletions, etc., as this Table of Contents shall not be considered part of the contract.

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## **ABBREVIATIONS AND COMMONLY USED TERMS**

Wherever the following abbreviations are used in these Specifications or on the Plans, they are to be construed the same as the respective expressions represented:

**ABS**: Anti-Lock Braking System

**AC**: Alternating Current

**ADA**: Americans with Disabilities Act

**AGM**: Absorbed Glass Mat- type of battery technology

**Ambient Temperature**: The temperature of the surrounding air. For testing purposes, ambient temperature must be between +16° C (+50° F) and +38° C (+100° F).

**Analog Signals**: A continuously-variable signal that is solely dependent upon magnitude to express information content. Note: Analog signals are used to represent the state of variable devices such as rheostats, potentiometers, temperature probes, etc.

**ANSI**: American National Standards Institute

**APTA**: American Public Transportation Association

**ASHRAE**: American Society of Heating, Refrigerating and Air Conditioning Engineers

**ASME**: American Society of Mechanical Engineers

**ASTM**: American Society for Testing and Materials

**ATA**: Advanced Technology Attachment

**ATC**: Automatic Traction Control

**Audible Discrete Frequency**: An audible discrete frequency is determined to exist if the sound power level in any 1/3-octave band exceeds the average of the sound power levels of the two adjacent 1/3-octave bands by 4 decibels (dB) or more.

**AVI**: Audio Video Interleave

**AWS**: American Welding Society

**Battery Compartment**: Low voltage energy storage, i.e. 12/24 VDC batteries.

**Battery Management System (BMS)**: Monitors energy, as well as temperature, cell or module voltages, and total pack voltage. The BMS adjusts the control strategy algorithms to maintain the batteries at uniform state of charge and optimal temperatures.

**BEB**: Battery Electric Bus

**BMP**: Bitmap file extension, a type of computer graphic file

**BOL**: Beginning Of Life, shall be the energy storage system usable capacity when new

**Braking Resistor**: Device that converts electrical energy into heat, typically used as a retarder to supplement or replace the regenerative braking.

**Burst Pressure**: The highest pressure reached in a container during a burst test.

**Capacity (fuel container):** The water volume of a container in gallons (liters).

**CCTV:** Closed Circuit Television

**CD:** Compact Disc

**Cells:** Individual components i.e. battery or capacitor cells.

**CF:** Compact Flash

**CFR:** Code of Federal Regulations

**CMVSA:** Commercial Motor Vehicle Safety Alliance

**CTDOT:** State of Connecticut, Department of Transportation

**Code:** A legal requirement.

**CTDMV:** State of Connecticut, Department of Motor Vehicles

**Curb Weight:** Weight of vehicle, including maximum fuel, oil and coolant; and all equipment required for operation and required by this Specification, but without passengers or driver.

**DAS:** State of Connecticut, Department of Administrative Services

**dBA:** Decibels with reference to 0.0002 microbar as measured on the "A" scale.

**DBE:** Disadvantaged Business Enterprise

**DC:** Direct Current

**DC to DC Converter:** A module which converts a source of direct current (DC) from one voltage level to another.

**DDR:** Double Data Rate, a type of diagnostic data reader

**Destroyed:** Physically made permanently unusable.

**Discrete Signals:** A signal which can take only pre-defined values, usually of a binary 0 or 1 nature where 0 is battery ground potential and 1 is a defined battery positive potential.

**DIMM:** Dual In-line Memory Module - type of memory used in computers

**DOE:** U.S. Department of Energy

**DOT:** U.S. Department of Transportation

**DR:** Diagnostic Reader

**DRL:** Daytime Running Lights

**Driver's Eye Range:** The 95th-percentile ellipse defined in SAE Recommended Practice J941, except that the height of the ellipse shall be determined from the seat at its reference height.

**DVD:** Digital Versatile Disc

**DVR:** Digital Video Recorder

**ECM:** Engine Control Module

**ECS:** Emission Control System

**EMI:** Electromagnetic Interference

**Energy Density:** The relationship between the weight of an energy storage device and its power output in units of watt-hours per kilogram (Wh/kg).

**Energy Storage System:** A component or system of components that stores energy and for which its supply of energy is re-chargeable by a PPU and/or an off-vehicle energy source.

**EOL:** End Of Life, shall be the last day of service or agreed upon warranty before replacement

**EPA:** U.S. Environmental Protection Agency

**ESS:** Energy Storage System

**F:** Fahrenheit

**FCC:** Federal Communications Commission

**Fire Resistant:** Materials that have a flame spread index less than 150 as measured in a radiant panel flame test per ASTM-E 162-90.

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

**FMCSA:** Federal Motor Carrier Safety Administration (US)

**FMCSR:** Federal Motor Carrier Safety Regulations (US)

**FMEA:** Failure Modes and Effects Analysis

**FMVSS:** Federal Motor Vehicle Safety Standards (US)

**FPS:** Frames Per Second, usually video recording reference

**Free Floor Space:** Floor area available to standees, excluding the area under seats, area occupied by feet of seated passengers, the vestibule area forward of the standee line, and any floor space indicated by manufacturer as non-standee areas such as, the floor space "swept" by passenger doors during operation. Floor area of 1.5 square feet shall be allocated for the feet of each seated passenger that protrudes into the standee area.

**FTA:** Federal Transit Administration (US)

**Fusible Material:** A metal, alloy, or other material capable of being melted by heat.

**GAAP:** Generally Accepted Accounting Principles

**GAWR (Gross Axle Weight Rated):** The maximum total weight as determined by the axle manufacturer, at which the axle can be safely and reliably operated for its intended purpose.

**Gb:** Gigabyte

**GPS:** Global Positioning System

**Gross Load:** One hundred fifty pounds for every designed passenger seating position, for the driver and for each 1.5 square feet of free floor space.

**GVW (Gross Vehicle Weight):** Curb weight plus gross load.

**GVWR (Gross Vehicle Weight Rated):** The maximum total weight as determined by the vehicle manufacturer, at which the vehicle can be safely and reliably operated for its intended purpose.

**HD:** High Definition

**HHDD:** Heavy, Heavy-Duty Diesel

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

$$\left[ \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} (a) dt \right]^{2.5} (t_2 - t_1)$$

where:

a = the resultant acceleration at the center of gravity of the head form expressed as a multiple of g, the acceleration of gravity. t<sub>1</sub> and t<sub>2</sub> = any two points in time during the impact.

**High Voltage (HV):** Greater than 50 volts (AC and DC).

**HMI:** 67 Human Machine Interface

**Hoses:** Flexible lines.

**hp:** Horsepower

**HVAC:** Heating, Ventilation and Air Conditioning

**Hybrid:** A vehicle that uses two or more distinct power sources to propel the vehicle.

**Hz:** Hertz, a measure of frequency

**IAS:** International Approval Services

**ID:** Identification

**Inverter:** Module that converts direct current (DC) to/from alternating current (AC).

**I/O:** Input/Output

**ISO:** International Organization for Standardization

**ITS:** Intelligent Transportation System

**IVS:** Intelligent Vehicle System

**JIC:** Joint Industrial Council

**JPEG:** Joint Photographic Experts Group

**Labeled:** Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization, that is acceptable to the authority having jurisdiction and concerned with product evaluation, that

maintains periodic inspection of production labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

**Leakage:** Release of contents through a defect or crack.

**LED:** Light Emitting Diode

**Line:** All tubes, flexible and hard, which carry fluids.

**Liner:** Inner gas tight container or gas container to which the overwrap is applied.

**Local Regulations:** Regulations below the state level.

**Low Floor Bus:** A bus which, between at least the front (entrance) and rear (exit) doors, has a floor sufficiently low and level so as to remove the need for steps in the aisle between the doors and in the vicinity of these doors.

**Low Voltage (LV):** 50 volts or less (AC and DC).

**MAN:** Corporate manufacture of axles

This is a axle manufacturer but it's German and hard to say- everyone just says MAN - You are correct, MAN is a corporate name

**MDBF:** Mean Distance Between Failure

**MDBSF:** Mean Distance Between Service Failure

**MDT:** Mobile Data Terminal

**MDVR:** Mobile Digital Video Recording

**Metallic Hose:** A hose whose strength depends primarily on the strength of its metallic parts; it can have metallic liners or covers, or both.

**MHz:** Megahertz

**MILSPEC:** Military Specification

**mm:** millimeter

**Module:** Assembly of individual components.

**Motor (Electric):** Device that converts electrical energy into mechanical energy.

**Motor (Traction):** An electric motor used to power the driving wheels of the bus.

**mph:** Miles per hour

**MPEG:** Moving Pictures Experts Group

**MJPEG:** Motion JPEG video format

**MTBF:** Mean Time Between Failures

**MTTR –** Mean Time To Repair

**NATEF/ASE:** The National Automotive Technicians Education Foundation/Automotive Service Excellence

**NFPA:** National Fire Protection Association

**NHTSA:** National Highway Traffic Safety Administration

**NIC:** Network Interface Card

**NTP:** Notice to Proceed

**NTSC:** National Television System Committee video standard, commonly used in the U.S.

**OCU:** Operator Control Unit

**OEM:** Original Equipment Manufacturer (Bus Manufacturer)

**Operating Pressure:** the varying pressure that develops in a container during service.

**OPM:** State of Connecticut, Office of Policy & Management

**OSHA:** Occupational Safety and Health Administration

**OSI:** Open Systems Interconnect

**PC:** Personal Computer

**PCMCIA:** The older parallel memory cards- not sure anything uses it anymore

**PHA:** Predictive Hazard Analysis

**Physical Layer:** The first layer of the seven-layer ISO OSI reference model. This provides the mechanical, electrical, functional and procedural characteristics required to gain access to the transmission medium (e.g., cable) and is responsible for transporting binary information between computerized systems.

**PM:** Preventative Maintenance

**PMAD:** Personnel Mobility Aid Devices

**Power:** Work or energy divided by time.

**Power Density:** Power divided by mass, volume or area.

**PPI:** Producer Price Index

**PPM:** Pre-Production Meeting

**PRD:** Pressure Relief Device

**Propulsion System:** System that provides propulsion for the vehicle proportional to operator commands. Includes, as applicable, the HDS system, Energy Storage System, and the HSC.

**psi:** Pounds per Square Inch

**PWM:** Pulse Width Modulation

**Regenerative Braking:** Deceleration of the bus by switching motors to act as generators that return vehicle kinetic energy to the Energy Storage System.



**Retarder**: Device used to augment or replace some of the functions of primary friction based braking systems of the bus.

**RFI**: Radio Frequency Interference

**RFP**: Request For Proposals

**RPM**: Revolutions per Minute

**Rupture**: Sudden and unstable damage propagation in the structural components of the container resulting in a loss of contents.

**SAE**: Society of Automotive Engineers

**SDRAM**: Synchronous Dynamic Random Access Memory that is synced- we use this term in the video spec

**Seated Load**: 150 pounds for every designed passenger seating position and for the driver.

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

**Serial Data Signals**: Serial data signals are a current loop based representation of ASCII or Alphanumeric data used for transferring information between devices by transmitting a sequence of individual bits in a prearranged order of significance. Note: An example is the communication that takes place between two or more electronic components with the ability to process and store information.

**SLW**: Seated Load Weight

**SOC**: State Of Charge, shall be monitored by the driver as available range until charge required

**SOH**: State Of Health, shall be the measure of ESS degradation over time from BOL

**Solid State Alternator**: A module that converts high-voltage DC to low-voltage DC (typically 12/24 volt systems).

**Specification**: A particular or detailed statement, account, or listing of the various elements, materials, dimensions, etc. involved in the manufacturing and construction of a product.

**SPI**: Society of the Plastics Industry

**Standard**: A firm guideline from a consensus group.

**Standee Line**: A line marked across the bus aisle to designate the forward area that passengers may not occupy when the bus is moving.

**State of Charge (SOC)**: Quantity of electric energy remaining in the battery relative to the maximum rated Amp hour (Ah) capacity of the battery expressed in percent. This is a dynamic measurement used for the energy storage system. A full SOC indicates that the energy storage system cannot accept further charging from the regenerative braking system.

**Stress Loops**: The "pig-tails" commonly used to absorb flexing in piping.

**Structure**: The structure shall be defined as the basic body, including floor deck material and installation, load bearing external panels, structural components, axle mounting provisions and suspension beams and attachment points.

**TB**: Terabytes

**TCRB**: Transportation Cooperative Research Board

**TIFF**: Tagged Image File Format

**TRB**: Transportation Research Board

**TVM**: Transit Vehicle Manufacturer

**UL**: Underwriters Laboratories

**USB**: Universal Serial Bus Port

**V**: Volt

**VAC**: Voltage A/C

**VDC**: Voltage D/C

**Wheelchair**: A mobility aid belonging to any class of three (3) or four (4) wheeled devices, usable indoors, designed for and used by individuals with mobility impairments, whether operated manually or powered. A “common wheelchair” is such a device that does not exceed 30 inches in width and 48 inches in length measured 2 inches above the ground, and does not weigh more than 600 pounds when occupied.

**ZEV**: Zero-Emission Vehicles

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# Request for Proposals (RFP)

## Authorization

The following Terms and Conditions govern the Request for Proposals (RFP) issued by the Department of Transportation (CTDOT). Incorporated by reference into these Terms and Conditions are applicable provisions of the Connecticut General Statutes, including but not limited to, those in Section 13b-34.

Proposers shall comply with the statutes and regulations as they exist on the date of their bid and as they may be modified from time to time during the term of the contract, as it may be amended.

CTDOT has not fully identified and programmed all of the funding required for this procurement; however, typical funding for procurements of this type is noted below. CTDOT expects to purchase all of the replacement equipment identified in this proposal. However, Proposers should be aware that all funding has not yet been identified and put in place.

- **NOTICE OF FEDERAL PARTICIPATION/FUNDING**

The anticipated funding breakdown for this procurement is as follows:

Federal Participation: 80%  
FTA Section 5307 – CFDA #20.507  
Current FTA Grant: CT-90-X523 & future grants

State Participation: 20%  
State Project No: DOT04000065RS[HRC1]

The contract will be awarded subject to conditions of a financial assistance contract between the FTA and CTDOT and all contract parties must comply with all applicable FTA requirements.

**1. Introduction To BizNet**

CTDOT requires that all companies create a Business Network (BizNet) Account and add their company profiles to the State of Connecticut BizNet system. Companies are responsible for maintaining and updating company information in their BizNet Accounts as updates occur. Companies that have been certified through the Supplier Diversity or the Pre-Qualification Program, have already created a BizNet account.

The BizNet login is: <https://www.biznet.ct.gov/AccountMaint/Login.aspx>

New Companies: Create an account by clicking the BizNet login link above and then the button on the right labeled "Create New Account". Login and select CT Procurement and Company Information. Please be sure to complete information in all tabs (Company Information, Accounts, Address, etc.)

Existing Companies Needing to Update Their Information: Login to BizNet and select CT Procurement and Company Information.

Anyone having difficulty connecting to their account or downloading or uploading forms should call DAS/Procurement Services at 860-713-5095.

**2. Business Friendly Legislation**

Companies must submit forms electronically to their BizNet account if they haven't already done so. These forms must be updated on an annual basis, no later than thirty (30) days after the effective date of any material change. Rather than completing them with each bid/RFP submittal, companies that have already filed these forms have the ability to view, verify and update their information prior to submitting a bid/RFP response.

**Instructions for Uploading Affidavits and Non-Discrimination Forms:**

**Click on the following link for instructions on how to upload Affidavits and Non-Discrimination forms:**

**<http://das.ct.gov/images/1090/Upload%20Instructions.pdf>**

**(a) AFFIDAVITS**

**THE FOLLOWING FORMS MUST BE SIGNED, DATED, NOTARIZED, UPLOADED OR UPDATED ON BIZNET. TO OBTAIN A COPY OF THESE FORMS, YOU MUST LOGIN INTO BIZNET AND FOLLOW THE INSTRUCTIONS LISTED ABOVE.**

- (1) OPM Ethics Form 1 – Gift & Campaign Contribution Certification (at the time of Contract execution)**
- (2) OPM Ethics Form 5 – Consulting Agreement Affidavit (at the time of RFP submittal)**
- (3) OPM Ethics Form 6 – Affirmation of Receipt of State Ethics Laws Summary (at the time of RFP submittal)**
- (4) OPM Form 7 – Iran Certification (at the time of RFP submittal)**

For information regarding these forms, please access OPM's website by clicking on the following link:

<http://www.ct.gov/opm/cwp/view.asp?a=2982&q=386038>

**(b) NON-DISCRIMINATION**

**CHOOSE ONE (1) FORM THAT APPLIES TO YOUR BUSINESS. COMPLETE AND UPLOAD OR UPDATE ON BIZNET ANNUALLY. TO OBTAIN A COPY OF THESE FORMS, YOU MUST LOGIN INTO BIZNET AND FOLLOW THE INSTRUCTIONS LISTED ABOVE (the Nondiscrimination Form will be required prior to the execution of the Contract)**

- (1) Form A – Representation by Individual (Regardless of Value)**

- (2) Form B – Representation by Entity (Valued at \$50,000 or less)
- (3) Form C – Affidavit by Entity (RECOMMENDED) (Valued at \$50,000 or more)
- (4) Form D – New Resolution by Entity
- (5) Form E – Prior Resolution by Entity

For information regarding these forms and on which form your company should complete, please access OPM's website by clicking following link: [http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav\\_GID=1806](http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806)

### 3. Insurance Accord Certificates

Contractors are responsible for maintaining their BizNet account with new and/or updated insurance information.

The following documentation will need to be uploaded to each company's BizNet account and evidencing that the State of Connecticut is an additional insured:

- (a) Certificate of Insurance (Accord Form)
- (b) The insurance policy declaration page
- (c) The additional insured endorsement to the policy

Training documentation relating to the completion of the above-reference forms is available through the DAS Website under "DAS Business Friendly Initiatives" at the following website: [http://portal.ct.gov/DAS/Search-Results?SearchKeyword=insurance\\_instructions](http://portal.ct.gov/DAS/Search-Results?SearchKeyword=insurance_instructions)

### 4. Proposal Responses

Other than the forms noted above which should be submitted electronically, proposals must be mailed or hand-carried in accordance with the following instructions:

If the proposal is sent via **A COMMERCIAL EXPRESS CARRIER**, please address proposal as follows:

The Department of Transportation  
Attn: Mary Matuszak  
2800 Berlin Turnpike  
Newington, CT 06111

If the proposal is sent via **U. S. MAIL**, please address proposal as follows:

The Department of Transportation  
Attn: Mary Matuszak  
P.O. Box 317546  
Newington, CT 06131-7546

If the proposal is being **HAND CARRIED**, please deliver to:

The Department of Transportation  
2800 Berlin Turnpike  
Newington, CT  
Security Desk – Ask for Mary Matuszak at extension 2342

The following forms, along with any required documentation, descriptive literature, catalogs, brochures, pictures, etc. shall be submitted as part of your Proposal:

- Signature Page (DOTRFP-26)
- Proposer's Statement of Qualifications (DOTRFP-14)
- Employment Information Form (DOT-45)

- Agency Vendor Form
- Form W-9
- Compliance with Connecticut General Statute Section 31-57b
- Acknowledgement of Addenda – if applicable
- Exhibit A.1 – Vehicle Technical Information
- Exhibit A.2 - Federal Transit Administration (FTA) Required Clauses (Noted Certifications)
- Contract Exhibit B – Price Schedule (DOT-16)
- Required Submittals – See Section “Submittal Requirements”

Additional forms such as those listed below must be reviewed carefully and accepted by the Proposer prior to proposal submittal:

- Request for Proposal Document (DOTRFP-22)
- Exhibit A – Description of Goods & Services and Additional Terms & Conditions
- Exhibit A – Technical Specifications
- Exhibit A.2 – Federal Transit Administration (FTA) Required Clauses
- Contract Exhibit C – SEEC Form 11
- Exhibit D - Sample Contract (SP-50)

***Proposers are cautioned that there may be additional documents, attachments or requirements depending on the complexity of the RFP. Please read ALL RFP documents carefully and provide all required information. Failure to do so may result in rejection of your proposal.***

## Overview

The State of Connecticut, Department of Transportation (CTDOT) owns and contracts for the management of the CTTransit system and also is the primary funder of twelve (12) transit districts in the State of Connecticut. The purpose of this procurement is to purchase up to thirty-six (36) buses for Connecticut's transit system for both replacement and option buses.

This procurement is for 35' and 40' low floor heavy-duty battery electric transit buses (BEB). All are required to 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 persons with disabilities.

It is expected that other transit agencies will piggyback on this procurement. The equipment needs of the Greater Bridgeport Transit Authority, the Housatonic Area Regional Transit District, the Norwalk Transit District, the Southeast Area Transit District, the Estuary Transit District, the Windham Regional Transit District, Middletown Area Transit District, Milford Transit District and the University of Connecticut have been included in this procurement. It is possible that various minor modifications may be needed to accommodate the needs of transit districts that may participate in this process.

The term of this contract will be for two (2) years from the date of award so that buses may be replaced as they reach the end of their lifespan. The Contractor(s) shall comply with all applicable Federal, State and local regulations. The buses shall meet all applicable FMVSS and shall accommodate all applicable FMCSR regulations in effect at the date of manufacture.

Separate awards for different types of vehicles are possible under this RFP.

**Expected Two (2) Year Equipment Need**

The tables below show CTDOT’s and transit districts’ planned purchases for the duration of the Contract.

Vehicle Type	Like Replacements	Unlike Replacements	Base Year 2019-20 Option Buses
35 Foot Buses	0	0	5
40 Foot Buses	0	12	5
<b>Totals</b>	0	12	10
	<b>Replacement Buses</b>	12	
	<b>Total Buses</b>	22	

Vehicle Type	Like Replacements	Unlike Replacements	Year One 2020-21 Option Buses
35 Foot Buses	0	3	5
40 Foot Buses	0	4	4
<b>Totals</b>	0	7	9
	<b>Replacement Buses</b>	7	
	<b>Total Buses</b>	16	

Vehicle Type	Like Replacements	Unlike Replacements	Year Two 2021-22 Option Buses
35 Foot Buses	0	17	5
40 Foot Buses	0	10	5
<b>Totals</b>	0	27	10
	<b>Replacement Buses</b>	27	
	<b>Total Buses</b>	37	

Total Replacement Like Kind	0
Total Replacement Unlike Kind	46
Total Option Buses	29
Maximum Bus Purchase	75

**Scope**

- Purchase of up to seventy-five (75) buses for Connecticut’s transit system for replacement and system expansion.
- Manufacture 35’and 40’ low floor heavy-duty battery electric transit buses

Please refer to “Exhibit A – Technical Specifications” for detailed description of Scope of Work.



## Instructions to Proposers

### 1. Proposal Schedule

RELEASE OF RFP:	Date:	August 28, 2019
RECEIPT OF QUESTIONS:	Date:	September 18, 2019
ANSWERS TO QUESTIONS POSTED AS ADDENDUM:	Date:	October 9, 2019
RFP DUE DATE:	Date:	October 30, 2019

CTDOT reserves the right to modify any of the dates and/or times noted above. If it becomes necessary to adjust the Proposal Schedule, the change(s) will be provided via a written Addendum and posted on the State Contracting Portal.

### 2. Amendment or Cancellation of the RFP

CTDOT reserves the right to cancel, amend, modify or otherwise change this RFP at any time if it deems it to be in the best interest of the State to do so.

### 3. Internet Disclaimer

Documents and other information obtained through the Internet, World Wide Web sites or sources other than the Department of Administrative State Contracting Portal are not to be construed as official information for the purposes of conducting other business with CTDOT.

Persons and/or entities that reproduce and/or make such information available by any means are not authorized by CTDOT to do so and may be liable for claims resulting from the dissemination of unofficial, incomplete and/or inaccurate information.

### 4. Questions

Questions for the purpose of clarifying this RFP must be received no later than the date and time specified in Section 1, "Proposal Schedule" and shall be directed to the CTDOT Contact, Mary Matuszak via email at: [mary.matuszak@ct.gov](mailto:mary.matuszak@ct.gov)

Questions shall be e-mailed simultaneously (cc:'d) to:

[philip.scarrozzo@ct.gov](mailto:philip.scarrozzo@ct.gov)

and

[richard.hanley@ct.gov](mailto:richard.hanley@ct.gov)

**Note: Always include the RFP identification (19DOT7000 – Electric Bus RFP) in the Subject Line of your e-mail correspondence.**

Only questions that CTDOT considers to be in CTDOT's best interest will be answered. CTDOT is the only party who will determine its best interest.

### 5. Communications

During the period from your organization's receipt of this Request for Proposal, and until a contract is awarded, your organization shall not contact any employee of the State of Connecticut concerning this procurement except in writing directed to the CTDOT Contact, Mary Matuszak via email at: [mary.matuszak@ct.gov](mailto:mary.matuszak@ct.gov) or as otherwise directed by CTDOT.

## 6. Solicitation Submission

Solicitations shall be submitted by the RFP due date and time noted in Section 1. Proposals received after the date and time specified shall be rejected.

## 7. Sealed Proposals (ONE ORIGINAL AND FIVE (5) COPIES)

Proposals must be submitted in a SEALED envelope or carton, clearly marked with RFP No., the date, and the name and address of the Proposer. Please use the label on Form DOTRFP-11 to identify your Proposal. Any material that is not so received may be opened as general mail, and result in invalidating the Proposer's submission. Electronic, facsimile or unsealed proposals will not be accepted under any circumstances.

1. This is a Request for Proposals (RFP), not an Invitation to Bid (ITB); therefore, Proposals are not opened in public on the due date.
2. Proposals received after the time and date of due date/time specified in the RFP will not be accepted for consideration.
3. A Proposer will not be allowed to resubmit a proposal after the due date and time specified in the RFP. Incomplete bid forms may result in the rejection of the bid. Amendments to proposals received by CTDOT after the due date/time specified will not be considered. Proposals may be computer prepared, typewritten or handwritten in ink. All proposals shall be signed by a person duly authorized to sign proposals on behalf of the Proposer. Unsigned proposals may be rejected.
4. In the event of a discrepancy between the unit price and the extension, the unit price shall govern. Prices should be extended in decimal form, not fractions, to be net, and shall include transportation and delivery charges fully prepaid by the Contractor to the destination specified in the RFP, and subject only to cash discount.
5. Pursuant to Section 12-412 of the Connecticut General Statutes, the State of Connecticut is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Such taxes must not be included in proposal prices.
6. The Proposer fully acknowledges and agrees with all of the terms and conditions contained in this Form DOTRFP-22, the accompanying Proposal Form DOTRFP-26, and the Contract. Further, if the Proposer is awarded a contract for the goods and/or services called for in the RFP, the Proposer's signature on Proposal Form DOTRFP-26 shall mean that the Proposer shall be bound by and perform fully in accordance with all of the terms and conditions set forth in the RFP, this Form DOTRFP-22 and the Contract as if the Proposer had actually executed Form DOTRFP-22 and the Contract itself.

## Proposal Requirements

### 1. Contract Period

The State intends that this contract shall be in effect for a period of two (2) years from Date Contract is signed by the State of Connecticut Office of the Attorney General (OAG).

### 2. Motor Carrier Safety Review

If the performance of the Contract requires the use and operation of any commercial motor vehicle, as defined in section 14-1 of the Connecticut General Statutes, or other motor vehicle with a gross vehicle weight rating (GVWR) of 18,000 pounds or more, each proposer will be the subject of an evaluation, conducted by the Connecticut Department of Motor Vehicles (CTDMV) of its motor carrier safety fitness. The primary factor in the evaluation is the current SAFESTAT score, calculated by the U.S. Federal Motor Carrier Safety Administration (FMCSA) in accordance with the provisions of Title 49, Section 385.1, et seq., of the Code of Federal Regulations.

To be deemed qualified, the proposer must have an overall SAFESTAT category rating of "D" or better, on the date of evaluation. In addition, the proposer's driver and vehicle out-of-service rates will be consulted. The rates are determined by the number of out-of-service violations cited to the motor carrier in the course of all official, reported vehicle and/or driver inspections conducted during the preceding thirty (30) months. To be deemed qualified, the proposer must not have either a vehicle or driver out-of-service rate, by percentage of out-of-service violations per the total number of inspections reported, that is more than twice the national average. In addition, the proposer must have a current federal safety management practices rating of "Satisfactory," as defined in 49 CFR Section 385.3, as amended.

Proposer must provide the company's Federal DOT ID number where specified in Exhibit B. Failure to provide this information may result in the rejection of your proposal.

Further information concerning the motor carrier safety evaluation, to which a proposer is subject, may be obtained from CTDMV, at <http://www.ct.gov/dmv/cwp/view.asp?a=798&q=413206&dmvPNavCtr=|#49068>. All official inspection and rating data that is used in the performance of each evaluation is available to any motor carrier through the federal SAFESTAT website, at <http://www.ai.volpe.dot.gov/>.

### 3. Quantities and/or Usages

Any quantities set forth in this RFP are estimated quantities and/or usages only and in no way represent a commitment and/or intent to purchase any particular amount. Actual quantities may vary and will be identified on individual purchase orders issued by the requesting entity.

### 4. Brand Name Specifications and/or References

The use of the name of a manufacturer or of any particular make, model or brand in describing an item does not restrict proposers to that manufacturer or specific article unless limited by the term "no substitute". However, the article being offered must be of such character and quality so that it will serve the purpose for which it is to be used equally as well as that specified, and the proposer shall warrant to the State that it is fit for that purpose. RFP's on comparable items must clearly state the exact article being offered including any and all applicable options and the proposer shall furnish such other information concerning the article being offered as will be helpful in evaluating its acceptability for the purpose intended. If the proposer does not indicate that the article offered is other than as specified, it will be understood that the proposer is offering the article exactly as specified. Proposers must submit complete documentation on the specifications and quality levels of the proposed products. RFP's submitted that do not contain this documentation are subject to rejection.

**5. Stability of Proposed Prices**

Any price offerings from proposers must be valid for a period of One Hundred Eighty (180) days from the due date of the proposals.

**6. Amendment or Cancellation of the RFP**

CTDOT reserves the right to cancel, amend, modify or otherwise change this RFP at any time if it deems it to be in the best interest of the State to do so.

**7. Proposal Modifications**

No additions or changes to any proposal will be allowed after the proposal due date, unless such modification is specifically requested by CTDOT. CTDOT, at its option, may seek proposer retraction and/or clarification of any discrepancy or contradiction found during its review of proposals.

**8. Proposer Presentation of Supporting Evidence**

Proposers must be prepared to provide any evidence of experience, performance, ability, and/or financial surety that CTDOT deems to be necessary or appropriate to fully establish the performance capabilities represented in their proposals.

**9. Proposer Demonstration of Proposed Services and or Products**

At the discretion of CTDOT, proposers must be able to confirm their ability to provide all proposed services. Any required confirmation must be provided at a site approved by CTDOT and without cost to the State.

**10. Samples**

The quality of accepted samples does not supersede specifications for quality in the Request for Proposals unless the sample is superior in quality. All deliveries shall have at least the same quality as the accepted sample.

Samples are furnished free of charge. Proposers must indicate if their return is desired, which CTDOT shall do provided that they are returned at Proposer's sole cost and expense, FOB Proposer's destination, and that they have not been made useless by testing. If they are made useless by testing, the State may dispose of the samples as it deems to be appropriate. Samples may be held for comparison with deliveries.

**11. Erroneous Awards**

CTDOT reserves the right to correct inaccurate awards.

**12. Proposal Expenses**

Proposers are responsible for all costs and expenses incurred in the preparation of proposals and for any subsequent work on the proposal that is required by CTDOT.

**13. Ownership of Proposals**

All proposals shall become the sole property of the State and will not be returned.

**14. Ownership of Subsequent Products**

Any product, whether acceptable or unacceptable, developed under a contract awarded as a result of this RFP shall be the sole property of the State unless otherwise stated in the contract.

**15. Oral Agreement or Arrangements**

Any alleged oral agreements or arrangements made by proposers with any State agency or employee will be disregarded in any State proposal evaluation or associated award.

## Other Requirements

16. Section 4a-81 (the "Act") of the Connecticut General Statutes requires that the Invitation to Bid of which these Terms and Conditions are a part include a notice of the consulting affidavit requirements described in the Act. Accordingly, pursuant to the Act, vendors are notified as follows:

(a) No state agency or quasi-public agency shall execute a contract for the purchase of goods or services, which contract has a total value to the state of fifty thousand dollars or more in any calendar or fiscal year, unless the state agency obtains the written affidavit described in subsection (b) of this section.

(b) (1) The chief official of the vendor awarded a contract described in subsection (a) of this section or the individual awarded such contract who is authorized to execute such contract, shall attest in an affidavit as to whether any consulting agreement has been entered into in connection with such contract. Such affidavit shall be required if any duties of the consultant included communications concerning business of such state agency, whether or not direct contact with a state agency, state or public official or state employee was expected or made. "Consulting agreement" means any written or oral agreement to retain the services, for a fee, of a consultant for the purposes of (A) providing counsel to a contractor, vendor, consultant or other entity seeking to conduct, or conducting, business with the State, (B) contacting, whether in writing or orally, any executive, judicial, or administrative office of the state, including any department, institution, bureau, board, commission, authority, official or employee for the purpose of solicitation, dispute resolution, introduction or requests for information or (C) any other similar activity related to such contract. "Consulting agreement" does not include any agreements entered into with a consultant who is registered under the provisions of Chapter 10 of the Connecticut General Statutes concerning the State's Codes of Ethics, as of the date such affidavit is submitted. (2) Such affidavit shall be sworn as true to the best knowledge and belief of the person signing the certification on the affidavit and shall be subject to the penalties of false statement. (3) Such affidavit shall include the name of the consultant, the consultant's firm, the basic terms of the consulting agreement, a brief description of the services provided, and an indication as to whether the consultant is a former state employee or public official. If the consultant is a former state employee or public official, such affidavit shall indicate his or her former agency and the date such employment terminated. (4) Such affidavit shall be updated no later than 30 days after the effective date of any such change contained in the most recently filed affidavit or upon submittal of any new bid or proposal, whichever is earlier.

(c) If a vendor refuses to submit the affidavit required under subsection (b) of this section, then the state agency shall not award the Contract to such vendor and shall award the contract to the next highest ranked vendor or the next lowest responsible qualified bidder or seek new bids or proposals.

17. Section 4-252 (the "Statute") of the Connecticut General Statutes requires that the Invitation to Bid, of which these Terms and Conditions are a part, include a notice of the vendor certification requirements described in the Statute. Accordingly, pursuant to the Statute, vendors are notified as follows:

(a) The terms "gift," "quasi-public agency," "state agency," "large state contract," "principals and key personnel" and "participated substantially" as used in this section shall have the meanings set forth in the Statute.

(b) No state agency or quasi-public agency shall execute a large state contract unless the state agency or quasi-public agency obtains the written certifications described in this section. Each such certification shall be sworn as true to the best knowledge and belief of the person signing the certification, subject to the penalties of false statement.

(c) Any principal or key personnel of the person, firm or corporation submitting a bid or proposal for a large State contract shall certify on such forms as the State shall provide:

(1) That no gifts were made by (A) such person, firm, corporation, (B) any principals and key personnel of the person, firm or corporation, who participates substantially in preparing bids, proposals or negotiated State contracts, or (C) any agent of such person, firm, corporation or principals and key personnel, who participate substantially in preparing bids, proposals or negotiating state contracts, to (i) any public official or state employee of the state agency or quasi-public agency soliciting bids or proposals for state contracts, who participates substantially in the preparation of bid solicitations or requests for proposals for state contracts or the negotiation or award of state contracts, or (ii) any public official or state employee of any other state agency, who has supervisory or appointing authority over such state agency or quasi-public agency;

(2) That no such principals and key personnel of the person, firm or corporation, or agent of such person, firm or corporation or principals and key personnel, knows of any action by the person, firm or corporation to circumvent such prohibition on gifts by providing for any other principals and key personnel, official, employee or agent of the person, firm or corporation to provide a gift to any such public official or state employee; and

(3) That the person, firm or corporation is submitting bids or proposals without fraud or collusion with any person.

(d) Any bidder or proposer that does not make the certification required under this section shall be disqualified and the state agency or quasi-public agency shall award the contract to the next highest ranked proposer or the next lowest responsible qualified bidder or seek new bids or proposals.

(e) Each state agency and quasi-public agency shall include in the bid specifications or request for proposals for a large state contract a notice of the certification requirement of this section.

18. For all State contracts, defined in Conn. Gen. Stat. §9-612 as having a value in a calendar year of \$50,000 or more, or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," attached as Exhibit C.
19. Public Act 11-55 and Public Act 11-229 have amended the nondiscrimination provisions of the Connecticut General Statutes to add gender identity or expression to the existing protected classes and to require State contractors to adopt policies in support of the new statutes by means of an affidavit or resolution. Accordingly, attached as Form NDC is a form certification that the successful contractor must deliver executed at the time that it executes the Contract. The execution and submittal of this affidavit or resolution is a condition precedent to the State's executing the Contract, unless the contractor is exempt from this statutory requirement, in which case the contractor must obtain a written waiver from the State's Commission on Human Rights and Opportunities.

## Selection Criteria

A selection committee will review and score all proposals. The following information, in addition to the requirements, terms and conditions identified throughout this RFP Document, will be considered as part of the Selection process and are listed in order of relative importance.

### 1. PRODUCT DESIGN AND PERFORMANCE

#### 1a. Conformance with Technical Specifications

#### 1b. Vehicle construction and system design

- 1) Overall quality of vehicle design
- 2) Vehicle esthetic design
- 3) Vehicle weight and fuel economy

#### 1c. Documented reliability of proposed vehicle

- 1) Preventative maintenance schedule for proposed vehicle
- 2) Vehicle corrosion protection
- 3) History of performance of proposed vehicle

#### 1d. Electric charging equipment, including availability, charge management software, charger operation, physical footprint, ability to scale in quantity, reliability and non-proprietary charge capabilities. This shall include both overnight (depot) chargers, and overhead (opportunity) chargers.

#### 1e. Other design and performance elements of the components which comprise those systems

#### 1f. Test results, safety and maintenance factors and cost of operation for the bus design and system components proposed.

#### 1g. Completeness, clarity and format of maintenance, parts, training and operating manuals, price lists and Drawings

### 2. DELIVERY SCHEDULE

#### 2a. Minimum first year purchase

#### 2b. Remaining first year commitment

#### 2c. Option commitment

### 3. PRICE PER BUS

#### 3a. Base Bus

#### 3b. Optional Features/equipment specified throughout Exhibit A – Technical Specifications, and listed in Exhibit B

### 4. QUALIFICATIONS, PERFORMANCE AND FINANCIAL RESPONSIBILITY

#### 4a. Financial Capabilities

- 1) Financial resources and stability
- 2) Financial statements
- 3) Demonstrated ability to fiscally manage and monitor contracts
- 4) Willingness of any parent company to provide the required financial guaranty
- 5) Ability to obtain required insurance with coverage values that meet minimum requirements

**4b. Organizational Capabilities**

- 1) Proposed organizational and operational structure for this project
- 2) Technological resources
- 3) Established personnel practices and employee relations
- 4) Experience and qualifications of key personnel
- 5) Evidence that the human and physical resources are sufficient to perform the contract as specified and assure delivery of all equipment within the time specified in the Contract
- 6) Adequate manufacturing facilities sufficient to produce and factory-test equipment on schedule
- 7) A spare parts procurement and distribution system sufficient to support equipment maintenance without delays and a service organization with skills, experience, and equipment sufficient to perform all warranty and on-site work

**4c. Previous Contract History**

- 1) Defaults or cancellations on previous contracts
- 2) History of contracts covering past sales by vehicle model
- 3) The Proposer's experience and performance on similar industry contracts
- 4) The Proposer's demonstrated commitment and capability to satisfy warranty, repair and parts supply requirements on other contracts
- 5) The amount of effort required by other transit properties to secure satisfactory performance from the Proposer
- 6) References

**5. Additional equipment and training requirements for electric bus maintenance**

**CTDOT may award by individual item, group of items, or the entirety of all items. CTDOT may also reject any and all RFPs in whole or in part, and waive minor irregularities and omissions if the best interest of the state will be served.**



## Submittal Requirements

The Contractor shall furnish written evidence satisfactory to the State that they fully understand the purpose for which the equipment is intended and that they are qualified and capable of fulfilling all provisions of this contract. Please provide a written response to each item noted below for each bus type as part of RFP submission (one (1) original and five (5) copies) to enable comparison by the Selection Committee. Please number and letter your responses to correspond with each item listed below for identification purposes. Failure to provide the required information in full will be reflected in the scoring of your proposal.

### 1. **PRODUCT DESIGN AND PERFORMANCE**

The information provided by the Proposer in its technical submittal relating to buses to be provided will be utilized to evaluate the proposal in relation to this factor.

#### 1a. **Conformance with Technical Specifications**

- 2) Proposer shall fully and accurately complete and submit the "Vehicle Technical Information" questionnaire for each type of vehicle proposed. In addition, proposed ADA securement system, design and layout must be submitted with Proposal.

#### 1b. **Vehicle construction and system design**

##### 1) **Overall quality of vehicle design**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

##### 2) **Vehicle esthetic design**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features list, charts, tables, figures, statistics, promotional materials, photographs and any other information deemed relevant.

##### 3) **Vehicle weight and fuel economy**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

#### 1c. **Documented reliability of proposed vehicle**

##### 1) **Preventative maintenance schedule for proposed vehicle**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

##### 2) **Vehicle corrosion protection**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

**3) History of performance of proposed vehicle**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

**1d. Electric Charging Equipment**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs and any other information deemed relevant for overnight (depot) electric charging equipment and overhead (opportunity) electric charging equipment.

**1e. Other design and performance elements of the components which comprise those systems**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

**1f. Test results, safety and maintenance factors and cost of operation for the bus design and system components proposed**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for a for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

**1g. Completeness, clarity and format of maintenance, parts, training and operating manuals, price lists and drawings**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

**2. DELIVERY SCHEDULE**

The earliest or shortest delivery schedule from issuance of purchase order with evidence that it can be accomplished shall receive higher points.

**2a. Minimum first year purchase**

Proposer shall submit a delivery schedule and plan to adhere to the schedule.

**2b. Remaining first year commitment**

Proposer shall submit a delivery schedule and plan to adhere to the schedule.

**2c. Option commitment**

Proposer shall submit a delivery schedule and plan to adhere to the schedule.

**3. PRICE PER BUS**

The evaluation panel will consider the reliability of the buses to be provided, warranties, parts compatibility and required inventory expenses and other factors affecting the overall cost in determining its assessment of points to be awarded.

**2a. Exhibit B (Form DOTRFP-16 - Price Schedule)**

#### **4. QUALIFICATIONS, PERFORMANCE AND FINANCIAL RESPONSIBILITY**

This factor will look at the capability and reputation of the bus manufacturer as presented in the Proposal or as is determined by review of information available from references or other resources. The evaluation will look at the manufacturer's overall organizational and financial capabilities and consider key components such as organizational reporting structure, quality control, quality assurance, research and development, technical, training and parts support, response time, product capabilities, and financial history, as well as other considerations in reaching a final point determination.

##### **4a. Financial Capabilities**

###### **1) Financial resources and stability**

###### **2) Financial Statements for the past two (2) years (Should Proposers wish this information to be considered confidential, the information should be placed in a sealed envelope marked "Confidential". This information will not be made viewable to the public and will only be reviewed by the Selection Committee.)**

Proposer shall submit financial statements prepared in accordance with United States GAAP and audited by an independent certified public accountant

###### **3) Demonstrated ability to fiscally manage and monitor contracts**

Proposer shall submit references as to their fiscal management and monitoring of existing contracts of similar systems

###### **4) Willingness of any parent company to provide the required financial guaranty**

Proposer shall submit a letter from a letter of commitment signed by an officer of the parent company

###### **5) Ability to obtain required insurance with coverage values that meet minimum requirements**

Proposer shall submit a letter from an underwriter confirming that the Proposer can be insured for the required amount

##### **4b. Organizational Capabilities**

###### **1) Proposed organizational and operational structure for this project**

Proposer shall submit a formal organization and operational structure of planned project staffing

###### **2) Technological resources**

Proposer shall submit a description of the technical resources that the proposer can bring to the project as part of the ongoing project as well as describe the additional availability of technological resources should the need for additional services be detected (crisis mode)

###### **3) Established personnel practices and employee relations**

Proposer shall submit a description of each of the following: Turnover ratio, Affirmative Action policies and practices, full time/part time ratio, hiring practices, training procedures, and pre-screening

###### **4) Experience and qualifications of key personnel**

Proposers should submit resumes for all key personnel to be utilized on the project

###### **5) Evidence that the human and physical resources are sufficient to perform the contract as specified and assure delivery of all equipment within the time specified in the Contract**

Proposer shall submit a description of each of the following: Engineering, management and service organizations with sufficient personnel and requisite disciplines, licenses, skills, experience, and equipment to complete the Contract as required and satisfy any engineering or service problems that may arise during the warranty period

###### **6) Adequate manufacturing facilities sufficient to produce and factory-test equipment on schedule**

Proposers should submit a description of the Proposer's facilities

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

Proposers should submit a description of its procurement and distribution system

#### **4c. Previous Contract History**

**1) Defaults or cancellations on previous contracts**

Proposers shall submit a list of any defaults or cancellations on previous contracts as well as description of issue

**2) History of contracts covering past sales by vehicle model**

Proposers shall provide a past sales list by vehicle type including customer contact information

**3) The Proposer's experience and performance on similar industry contracts**

Proposers shall provide a list of work completed for location of similar size and make-up

**4) The Proposer's demonstrated commitment and capability to satisfy warranty, repair and parts supply requirements on other contracts**

Proposer shall provide examples of the above information from existing or prior contracts

**5) The amount of effort required by other transit properties to secure satisfactory performance from the Proposer**

Proposer shall provide customer references as required to satisfy this requirement

**6) References**

Proposers shall submit references from entities that have contracted with the Proposer, including but not limited to, evidence of satisfactory performance and integrity on contracts, making timely deliveries, meeting specifications and warranty provisions, parts availability, and steps Proposer took to resolve any judgments, liens, fleet defects history, and warranty claims

**5) ADDITIONAL EQUIPMENT AND TRAINING REQUIREMENTS FOR ELECTRIC BUS MAINTENANCE**

Any additional equipment or training that is not typically part of a diesel or diesel-hybrid maintenance bus garage including but not limited to: electric vehicle chargers (shop, overhead and overnight), scaffolding to access bus roof, weight requirements for bus lifts, maintenance tooling, tow bars, electrical protection equipment such as arc-flash, high-voltage.

## Exhibit D - Sample Contract

This RFP is not a contract and, alone, shall not be interpreted as such. Rather, this RFP only serves as the instrument through which proposals are solicited. The State will pursue negotiations with the proposer whose proposal scores highest. If, for whatever reason, CTDOT and the initial proposer fail to reach consensus on the issues relative to a contract, then CTDOT may commence contract negotiations with other proposers. CTDOT may decide at any time to suspend the current RFP process and start the RFP process again.

Exhibit D to this RFP is a draft contract and it is included in this RFP for informational purposes only in order to show some contract provisions that the State of Connecticut requires. It is not intended to, and will not, be the specific contract that the State and the successful vendor(s) will sign. After CTDOT selects a vendor, CTDOT will deliver a draft contract to the vendor for consideration and negotiation. The contract that CTDOT and the successful vendor will sign may vary from Exhibit D. The contract may include a liquidated damages clause at the discretion of the State.

**EXHIBIT A**

DESCRIPTION OF GOODS AND SERVICES SPECIFICATIONS  
AND ADDITIONAL TERMS AND CONDITIONS

**1. DESCRIPTION OF GOODS AND SERVICES:**

**1.1. See Exhibit A - Technical Specifications**

**1.2. INTERCHANGEABILITY**

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

**1.3 QUALITY ASSURANCE PROVISIONS**

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

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

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

CTDOT shall be represented at the Contractor's plant by resident inspectors. They shall monitor, in the Contractor's plant, the manufacture of transit buses built under the procurement. The presence of these resident inspectors in the plant shall not relieve the Contractor of its responsibility to meet all of the requirements of this procurement.

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

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

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

Discrepancies noted by the resident inspector during assembly shall be entered by the Contractor's inspection personnel on a record that accompanies the major component, subassembly, assembly, or bus from start of assembly through final inspection. Actions shall be taken to correct discrepancies or deficiencies in the manufacturing processes, procedures, or other conditions that cause articles to be in nonconformity with the requirements of the contract specifications. The inspection personnel shall verify the corrective actions and mark the discrepancy record. If

discrepancies cannot be corrected by replacing the nonconforming materials, CTDOT shall approve the modification, repair, or method of correction to the extent that the contract specifications are affected.

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

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

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

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

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

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

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

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

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



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

Buses that fail to pass the post-delivery tests are subject to non-acceptance. CTDOT shall record details of all defects on the appropriate test forms and shall notify the Contractor of acceptance, conditional acceptance, or non-acceptance of each bus within five (5) days after completion of the tests. The defects detected during these tests shall be repaired according to procedures defined previously in this document.

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

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

#### **1.4 TRAINING, MANUALS AND PARTS AVAILABILITY**

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

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

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

##### **A. Orientation Module**

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

##### **B. Electrical and Electronics**

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

C. Electric Drive Motor(s) and Accessories

1. Explanation of the motor and location of key components.
2. Explanation of the high-voltage driven accessories.
3. Explanation of the low-voltage electrical , air and water system.
4. Explanation of motor (s) tune-up procedures.
5. Basic troubleshooting procedures for the motor(s).
6. Motor overhaul/rebuilding
7. Battery electric drive propulsion system

D. Transmission and Controls (if so equipped)

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

E. Air Conditioning / Heat Pump

1. Explanation of the air conditioning / heat pump system and the location of all key components.
2. Explanation of the air conditioning / heat pump electrical system.
3. Explanation of the air conditioning / heat pump compressor along with basic troubleshooting and preventative maintenance of the compressor.
4. Basic troubleshooting of the air conditioning / heat pumpsystem.
5. Preventive maintenance of the air conditioning / heat pump system.
6. Same as E-1 thru E-5 above for the auxiliary heating system (if so equipped)

F. Wheelchair Ramp/Lift System

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

G. Brakes

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

H. Air System

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

I. Suspension, Steering and Axles

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

J. Body

1. Explanation of the body & attachment method of exterior body panels to vehicle structure (if applicable).
2. Basic repair of the exterior panels (if applicable)

3. Basic repair to composite body (if applicable), including certification of CTtransit personnel for repair (if needed)

#### K. Door System

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

#### L. Parts

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

#### M. Driving Instruction (For Maintenance Employees)

1. Operator Compartment
  - a. Controls and switches
  - b. Warning indicators and gauges
  - c. Seat adjustment
  - d. Door control
2. Walk Around Inspection
  - a. Compartment-by-compartment explanation
  - b. Mirror adjustment
  - c. Climate control system
  - d. EV charger port & hookup
3. Driving Instruction
  - a. Discussion of driving electric vehicles vs. internal-combustion engine (ICE) vehicles
  - b. Turns
  - c. Braking (including regenerative braking systems)
  - d. Transmission shifting
  - e. Backing
  - f. Best practices for electric vehicle operation

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

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

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

- c. Climate control systems
  - d. EV charger port & hookup
3. Driving Instruction
- a. Discussion of driving electric vehicles vs. internal-combustion engine (ICE) vehicles
  - b. Turns
  - c. Braking (including regenerative braking systems)
  - d. Transmission shifting patterns
  - e. Backing
  - f. Best practices for electric vehicle operation

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

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

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

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

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

- Operating and Repair Publications
- General vehicle information and specifications.
- A complete, well-developed troubleshooting guide covering all mechanical, electrical and electronic components, including motor, transmission, and HVAC systems.
- All preventive maintenance, lubrication and adjustment requirements.
- Complete wiring and schematic diagrams and schedules for wire and cable sizes and ratings including actual cable lay-out, plus locations in the coach of all electric and electronic components.
- All CAN wiring diagrams.
- All ground points control area network.
- Complete air and hydraulic diagrams showing locations in the coach of all air and hydraulic components. The air system diagram shall be 11 in. x 17 in. CAD drawing with color coding, using actual printed colors to match systems.

- Illustrative drawings, such as isometrics, exploded views or photographs identifying components in relationship to each other as mounted in the buses.
- Components shown in exploded views with all parts clearly identified including Contractor part number.
- Rebuilding procedures for all rebuildable components.
- Detailed, well-illustrated procedures for component change-out plus servicing, adjusting, testing, and run-in information as required.
- Body and structural information and material specifications for major accident repair.
- Seating and stanchion layouts and window diagrams.
- 11 in. x 17 in. scale drawing of driver's compartment, detailing all driver switches, controls, control panels and equipment locations (to be approved by CTDOT).
- Repair and calibration instructions and values.
- List of special test equipment and tools required to maintain and repair systems down to the component level including part number and supplier source.
- Three-dimensional drawings of bus and graphics and part number for all graphics.

### **Serial Numbers**

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

- motor(s)
- transmission (if equipped)
- all major subcomponents
- alternator or equivalent
- A/C or heat pump compressor and condenser / evaporator unit, including auxiliary heating unit
- drive axle
- power steering unit
- fuel cylinders (if applicable)
- air compressor
- mobility device/wheelchair ramp
- any electronic control module for major components
- transmission electronic control unit
- hydraulic pump
- steering box
- front/rear axle
- axle bunk right/left
- tires
- overhead driver keyboard
- driver's seat
- roof panel front/rear

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

beginning of the appropriate parts listing section. Lists shall include at least the following information for all parts as built:

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

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

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

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

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

### **1.5 ACCEPTANCE OF BUS**

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

### **1.6 REPAIRS AFTER NONACCEPTANCE**

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

### **1.7 REPAIRS BY CONTRACTOR**

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

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

### Quality Assurance

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

1. Control. The quality assurance organization shall exercise quality control over all phases of production, from initiation of design through manufacture and preparation for delivery. The organization shall also control the quality of supplied articles.
2. Authority and Responsibility. The quality assurance organization shall have the authority and responsibility for reliability, quality controls inspection planning, establishment of the quality control system, and acceptance / rejection of materials and manufactured articles in the production of the transit buses.
3. Quality Assurance Organization Functions and Minimum Functions. The quality assurance organization shall include the following minimum functions:
  - **Work instructions:** The quality assurance organization shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements.
  - **Records maintenance:** The quality assurance organization shall maintain and use records and data essential to the effective operation of its program. These records and data shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of three years after inspections and tests are completed.
  - **Corrective action:** The quality assurance organization shall detect and promptly ensure correction of any conditions that may result in the production of defective transit buses. These conditions may occur in designs, purchases, manufacture, tests or operations that culminate in defective supplies, services, facilities, technical data or standards.

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

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

4. Basic Standards and Facilities. The following standards and facilities shall be basic in the quality assurance process:
  - **Configuration control:** The Contractor shall maintain drawings, assembly procedures and other documentation that completely describe a qualified bus that meets all of the options and special requirements of this procurement. The quality assurance organization shall verify that each transit bus is manufactured in accordance with these controlled drawings, procedures and documentation.
  - **Measuring and testing facilities:** The Contractor shall provide and maintain the necessary gauges and other measuring and testing devices for use by the quality assurance organization to verify that the buses conform to all specification requirements. These devices shall be calibrated at established periods against certified measurement standards that have known, valid relationships to national standards.

- Production tooling as media of inspection: When production jigs, fixtures, tooling masters, templates, patterns and other devices are used as media of inspection, they shall be proved for accuracy at formally established intervals and adjusted, replaced or repaired as required to maintain quality.
  - Equipment use by resident inspectors: The Contractor's gauges and other measuring and testing devices shall be made available for use by the resident inspectors to verify that the buses conform to all specification requirements. If necessary, the Contractor's personnel shall be made available to operate the devices and to verify their condition and accuracy.
  - Safety Practices and General Workshop Procedures: The Contractor shall provide the Authority with all appropriate Safety Practices and General Workshop Procedures which will be in effect throughout this program. Examples include but are not limited to: rooftop equipment hoisting, fall restraints, vehicle jacking and securement, high voltage safety, etc.
5. Maintenance of Control. The Contractor shall maintain quality control of purchases:
- Supplier control: The Contractor shall require each Supplier to maintain a quality control program for the services and supplies that it provides. The Contractor's quality assurance organization shall inspect and test materials provided by Suppliers for conformance to specification requirements. Materials that have been inspected, tested and approved shall be identified as acceptable to the point of use in the manufacturing or assembly processes. Controls shall be established to prevent inadvertent use of nonconforming materials. At the Authority's request, the Contractor shall coordinate communications, conference calls, or meetings between the Authority, the Contractor, and any sub-suppliers. The Contractor shall coordinate and/or participate in source inspection(s) of sub-supplier parts, processes, and facilities as appropriate and at any time requested by the Authority.
  - Purchasing data: The Contractor shall verify that all applicable specification requirements are properly included or referenced in purchase orders of articles to be used on transit buses.
6. Manufacturing Control.
- Controlled conditions: The Contractor shall ensure that all basic production operations, as well as all other processing and fabricating, are performed under controlled conditions. Establishment of these controlled conditions shall be based on the documented Work instructions, adequate production equipment and special working environments if necessary.
  - Completed items: A system for final inspection and test of completed transit buses shall be provided by the quality assurance organization. It shall measure the overall quality of each completed bus.
  - Nonconforming materials: The quality assurance organization shall monitor the Contractor's system for controlling nonconforming materials. The system shall include procedures for identification, segregation and disposition.
  - Statistical techniques: Statistical analysis, tests and other quality control procedures may be used when appropriate in the quality assurance processes.
  - Inspection status: A system shall be maintained by the quality assurance organization for identifying the inspection status of components and completed transit buses. Identification may include cards, tags or other normal quality control devices.
7. Inspection System. The quality assurance organization shall establish, maintain and periodically audit a fully documented inspection system. The system shall prescribe inspection and test of materials, Work in process and completed articles. As a minimum, it shall include the following controls:
- Inspection personnel: Sufficient trained inspectors shall be used to ensure that all materials, components and assemblies are inspected for conformance with the qualified bus design.



- Inspection records: Acceptance, rework or rejection identification shall be attached to inspected articles. Articles that have been accepted as a result of approved materials review actions shall be identified. Articles that have been reworked to specified drawing configurations shall not require special identification. Articles rejected as unsuitable or scrap shall be plainly marked and controlled to prevent installation on the bus. Articles that become obsolete as a result of engineering changes or other actions shall be controlled to prevent unauthorized assembly or installation. Unusable articles shall be isolated and then scrapped. Discrepancies noted by the Contractor or resident inspectors during assembly shall be entered by the inspection personnel on a record that accompanies the major component, subassembly, assembly or bus from start of assembly through final inspection. Actions shall be taken to correct discrepancies or deficiencies in the manufacturing processes, procedures or other conditions that cause articles to be in nonconformity with the requirements of the Contract specifications. The inspection personnel shall verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, then the Authority shall approve the modification, repair or method of correction to the extent that the Contract specifications are affected.
  - Quality assurance audits: The quality assurance organization shall establish and maintain a quality control audit program. Records of this program shall be subject to review by the Authority.
8. Inspection and Inspection Stations. Inspection stations shall be at the best locations to provide for the Work content and characteristics to be inspected. Stations shall provide the facilities and equipment to inspect structural, electrical, hydraulic and other components and assemblies for compliance with the design requirements.
- Stations shall also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations shall minimally include underbody structure completion, body framing completion, body prior to paint preparation, water test, drive system component installation completion, underbody dress-up and completion, bus prior to final paint touchup, bus prior to road test and bus final road test completion.
9. Resident Inspectors and Resident Inspector's Role. The Authority shall be represented at the Contractor's plant by resident inspectors, as required by FTA. Resident inspectors may be Authority employees or outside contractors. The Authority shall provide the identity of each inspector and shall also identify his or her level of authority in writing. They shall monitor, in the Contractor's plant, the manufacture of transit buses built under the procurement. The presence of these resident inspectors in the plant shall not relieve the Contractor of its responsibility to meet all the requirements of this procurement. The Authority shall designate a primary resident inspector, whose duties and responsibilities are delineated in "Pre-Production Meetings," "Authority" and "Pre-Delivery Tests," below.
10. Pre-Production and Design Review Meetings. The primary resident inspector shall participate in Pre-Production and Design Review Meetings with the Authority. At these meetings, quality assurance procedures shall be addressed, the configuration of the buses and the manufacturing processes shall be finalized, and all Contract documentation provided to the inspector.
- No less than thirty (30) days prior to the beginning of bus manufacture, the primary resident inspector may meet with the Contractor's quality assurance manager and may conduct a Pre-Production audit meeting. They shall review the inspection procedures and finalize inspection checklists. The resident inspectors may begin monitoring bus construction activities two weeks prior to the start of bus fabrication.
11. Authority. During the project kickoff meeting the Contractor shall present and provide a copy of the manufacturers' formal quality assurance program. The Authority reserves the right to perform a quality assurance audit of the Contractor's quality assurance system to achieve a better

understanding of these processes and confirm compliance to these processes. Records and data maintained by the quality assurance organization shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of one year after inspections and tests are completed.

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

Discrepancies noted by the resident inspector during assembly shall be entered by the Contractor's inspection personnel on a record that accompanies the major component, subassembly, assembly or bus from start of assembly through final inspection. Actions shall be taken to correct discrepancies or deficiencies in the manufacturing processes, procedures or other conditions that cause articles to be in nonconformity with the requirements of the Contract specifications. The inspection personnel shall verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, then the Contractor shall submit for Authority review and approval the modification, repair or method of correction.

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

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

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

The pre-delivery tests shall be scheduled and conducted with thirty (30) days' notice so that they may be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus. The underfloor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the Contractor. A hoist, scaffold or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs. Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each bus.

16. Water Test Inspection. The pre-delivery tests shall include a water test inspection. The water test inspection checks the integrity of the vehicle's body seams, window frame seals and other exterior component closeouts for their ability to keep rainwater, road splash, melting snow and slush, and other exterior water from entering the inside of the vehicle. The vehicle's interior is inspected for signs of moisture and water leaks. To perform the leak inspection, interior ceiling and side panels are removed, and access doors are opened. If any moisture or water is detected, then the source of the leak will be located and repaired by the manufacturer, and the vehicle will be tested again.
17. Visual and Measured Inspections. Visual and measured inspections shall be conducted with the bus in a static condition. The purpose of the inspection testing includes verification of overall dimension and weight requirements, that required components are included and are ready for operation, and that components and subsystems designed to operate with the bus in a static condition do function as designed.
18. Total Bus Operation. Total bus operation shall be evaluated during road tests. The purpose of the road tests is to observe and verify the operation of the bus as a system and to verify the functional operation of the subsystems that can be operated only while the bus is in motion.  
  
Each bus shall be driven for a minimum of fifteen (15) miles during the road tests. If requested, computerized diagnostic printouts showing the performance of each bus shall be produced and provided to the Authority. Observed Defects shall be recorded on the test forms. The bus shall be retested when Defects are corrected and adjustments are made. This process shall continue until Defects or required adjustments are no longer detected.
19. Post Delivery Tests. The Authority may conduct acceptance tests on each delivered coach. These tests shall be completed within 15 (fifteen) days after coach delivery and shall be conducted in accordance with written test plans. The purpose of these tests is to identify Defects that have become apparent between the time of coach release and delivery to the Authority. The post-delivery tests shall include visual inspection and coach operations.  
  
Coaches that fail to pass the post-delivery tests are subject to non-acceptance. The Authority shall record details of all Defects on the appropriate test forms and shall notify the Contractor of non-acceptance of each coach within five days after completion of the tests. The Defects detected during these tests shall be repaired according to procedures defined in the Warranty Requirements Section: WR.
20. Visual Inspection. The post-delivery inspection is similar to the inspection at the Contractor's plant and shall be conducted with the coach in a static condition. Any visual delivery damage shall be identified and recorded during the visual inspection of each coach.
21. Coach Operation. Road tests will be used for total coach operation similar to those conducted at the Contractor's plant. In addition, the Authority may elect to perform chassis dynamometer tests. Operational deficiencies of each coach shall be identified and recorded.
22. Coach History Book. The Contractor shall provide a Coach History Book for each bus at time of delivery.

Each Coach History Book shall contain the following information at a minimum:

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

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

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

### **1.8 REPAIRS BY CTDOT OR OTHER AGENCY**

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

### **1.9 PARTS AVAILABILITY GUARANTY**

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

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

Where the Contractor fails to honor this parts guaranty or parts ordered by CTDOT are not received within thirty (30) days of the agreed upon delivery date, then the Contractor will provide to CTDOT, within seven (7)

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

#### **1.10 OPTIONAL SPARE PARTS PURCHASE**

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

#### **1.11 CONSUMABLE SPARE PARTS**

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

#### **1.12 RENEWAL PARTS INVENTORY LIST AND PARTS SEMINAR**

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

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

#### **1.13 WARRANTY PROVISIONS**

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

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

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

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

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

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

- Brake system
- Destination signs
- Heating, ventilating
- AC/ heat pump unit and compressor
- Door systems
- Air compressor
- Air dryer
- Wheelchair lift and ramp system
- Charge air cooler
- Fire suppression
- Power steering hydraulic or electric systems
- Cooling systems
  - Transmission cooler
- Passenger seating (excluding fabric)
- Fuel system and delivery system for auxiliary heating system (if so equipped)
- Surveillance system including cameras and video recorders.
- Communications Equipment
- Paint and decal provisions
- Corrosion protection
- Electric fan system
- Multiplex system

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



## **2. ADDITIONAL TERMS AND CONDITIONS:**

### **2.1. TVM CERTIFICATION**

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

### **2.2. DBE CERTIFICATION**

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

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

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

### **2.4 INTEREST OF MEMBERS OF, OR DELEGATES TO, CONGRESS**

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

### **2.5 PROHIBITED INTEREST**

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

### **2.6 SUBCONTRACTORS**

CTDOT must approve any and all subcontractors utilized by the Contractor prior to any such subcontractor commencing any work. Contractor acknowledges that any work provided under the Contract to any state entity is work conducted on behalf of the State and that the Commissioner of CTDOT or his/her designee may communicate directly with any subcontractor as the State deems to be necessary or appropriate. Contractor shall be responsible for all payment of fees charged by the subcontractor(s). A performance evaluation of any subcontractor shall be provided promptly by the Contractor to CTDOT upon request. The Contractor shall pay subcontractors for satisfactory performance of their contracts no later than thirty (30) days from the Contractor's receipt of each payment from CTDOT

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

### **2.7 SINGLE PROPOSAL RESPONSE**

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

### **2.8 PURCHASE ORDERS:**

Purchase Orders will be issued by CTDOT's Business Services & Inventory Management unit. Contractors are cautioned not to perform services without receiving a purchase order number. Questions regarding Purchase Orders should be directed to CTDOT's Business Services & Inventory Management unit at telephone number (860) 594-2345.

Before a Contractor is used, a Certificate of Insurance, as detailed elsewhere in this RFP, must be on file at CTDOT's Business Services & Inventory Management unit.

## **2.9 SECURITY AND/OR PROPERTY ENTRANCE POLICIES AND PROCEDURES**

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

## **2.10 DELIVERY**

Unless otherwise specified, the buses shall be delivered to the Hartford division of CTTransit at 100 Leibert Road, Hartford CT 02141, washed and with at least 98% SOC at a rate not to exceed four (4) buses per week. Delivery shall be completed within timeframe specified in the executed contract documents. Hours of delivery shall be 8:00 am through 4:00 pm, Monday through Friday.

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

## **2.11 CERTIFICATE OF ORIGIN**

The awarded vendor must furnish a certificate of origin to the State of Connecticut unless otherwise specified. The certificate of origin must be mailed or delivered to the State of Connecticut, Department of Transportation, 660 Brook Street, Rocky Hill, CT, 06067; Attention: Asset Management/Inventory unit, along with the invoice number. All information on the certificate must be completed accurately and serial numbers and odometer reading must match the bus that was delivered. **Failure to provide the proper certificate of origin will result in the delay of payment.**

The Certificate of Origin will be completed as follows:

Name of Purchaser: State of Connecticut, Department of Transportation – Asset Management  
Address: 660 Brook Street, Rocky Hill, CT 06067  
Odometer Reading: To be completed by the Contractor  
Signature: Of authorized representative transferring ownership to the State

## **2.12 PURCHASE ORDER PAYMENTS**

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

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

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

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

## **2.13 LIQUIDATED DAMAGES**

It is mutually understood and agreed by and between the parties to the Contract that time is of the essence with respect to the completion of the Work and that in case of any failure on the part of the Contractor to complete the Work within the time specified in the contract or any extension thereof, CTDOT will be damaged thereby. The amount of said damages, being difficult if not impossible of definite ascertainment and proof, it is hereby agreed that the amount of such damages due CTDOT shall be fixed at \$150.00 per calendar day per bus not delivered in substantially as good condition as inspected by CTDOT at the time released for shipment.

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

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

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

#### **2.14 PRICE ESCALATION/ECONOMIC PRICE ADJUSTMENT**

CTDOT reserves the right to order buses and equipment over the two (2) year period beginning upon the day of contract award. The base price for buses furnished shall be the price agreed upon by the parties on that award date. The prices shall remain firm/fixed for any orders issued by CTDOT within a period of 365 days of contract award. The price(s) of any buses/equipment ordered by CTDOT after the initial 365 days firm/fixed price period shall be, the agreed upon base price adjusted to reflect any change which will be calculated based on the percentage change in the PPI category WPS141106 "Transportation Equipment", "Trucks, over 14,000 lbs. GVW". The percentage change in this price index shall be used to adjust the Base Order Prices. However, in no event will the price(s) for any purchase order be adjusted by more than five (5) percent of the price(s) that would have been in effect twelve (12) months prior to the date of the release, in accordance with the terms and conditions set forth above. If significant modifications are made to the technical specifications, the parties will enter into negotiations to determine the final unit price for subsequent orders.

#### **2.15 ASSIGNMENT OF CONTRACT BY STATE**

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

#### **2.16 BUSINESS OPERATIONAL CHANGES**

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

State of Connecticut, Department of Transportation  
Business Services and Inventory Management  
2800 Berlin Turnpike  
P.O Box 317546  
Newington, CT 06131-7546  
Attn: Mary Matuszak, Fiscal Administrative Supervisor  
[mary.matuszak@ct.gov](mailto:mary.matuszak@ct.gov)

**EXHIBIT A**

**TECHNICAL SPECIFICATIONS**

CONNECTICUT DEPARTMENT OF TRANSPORTATION

## Exhibit A -Technical Specifications

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35' and 40' Low Floor, Heavy-Duty Battery Electric Powered Transit Buses

August, 2019

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## 1- Abbreviations / Acronyms

See DOT RFP-22 for this section.

## 2- General Requirements

This procurement is for 35' and 40' low floor, heavy-duty battery electric powered transit buses. All are required to have a minimum expected life of twelve (12) years or 500,000 miles, whichever comes first, without major structural failure and are intended for the widest possible spectrum of passengers, including children, adults, the elderly, and persons with disabilities.

These buses shall be considered to be heavy-duty or severe duty vehicles and shall be designed to operate the "Transit Bus Duty Cycle" as described in the American Public Transportation Association "Standard Bus Procurement Guidelines". All definitions and abbreviations listed in the APTA "Standard Bus Procurement Guidelines" shall also apply to this procurement.

The buses shall be the latest most current model in production, aesthetically designed and constructed to provide safe, reliable and economic operation in all modes and weather conditions. The bus shall be designed to optimize interior passenger space. Design shall be conducive to safe passenger entrance, seating, egress and all other movement. Each transit bus will comply with ADA / State regulations regarding mobility impaired passengers and accommodate a minimum of two (2) securable wheelchair positions that utilize convertible jump seating for use in the absence of wheelchair passengers.

No compromise to structural design or passenger safety for weight saving purposes shall be permitted.

The bus interior design and configuration shall be considerate of passenger safety in all circumstances including collisions from any angle or emergency situations. The buses shall meet or exceed regulations applicable to the Federal Transit Administration and Motor Vehicle Safety Standards. Buses in this procurement shall have passed all required Altoona testing before time of contract. For the purpose of this specification all electrical components should meet Buy America requirements.

The Contractor shall comply with all applicable Federal, State and local regulations. The bus shall meet all applicable FMVSS and shall accommodate all applicable FMCSR regulations in effect at the date of manufacture.

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

Each bus facility which procures vehicles through this procurement shall receive three (3) complete sets of printed and bound service manuals including but not limited to minor repair, major repair, service, maintenance, electrical schematics, parts and vendor manuals. Electronic versions on DVD or USB drive shall be provided. Notebook / Toughbook laptop computers, rated for "severe-duty", preloaded with registered software for each of the applications listed below shall be provided to each facility;

- Drive motor programming and diagnostics
- Driveline system programming and diagnostics
- Multiplex system programming and diagnostics
- HVAC system programming and diagnostics
- Anti-Lock Brake / Electronic Stability Control diagnostics
- Electronic Destination Sign programming and diagnostics
- Video Security System programming and diagnostics

- Energy Storage System (ESS) / management system
- Electronic Communication, Radio System, Passenger Counter and (ITS)

Contractor shall provide line-item cost option to purchase additional individual copies of above.

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

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

Contractor shall provide line-item cost option to purchase additional individual equipment listed above.

Proprietary tools, preventative maintenance and repair parts shall be available and supported for twelve (12) years.

Test ports shall be provided for commonly checked functions on the bus.

One spare for each different type of traction motor used shall be provided to each procuring property inclusive to this agreement.

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

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

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

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

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

In the design and manufacture of the bus the Contractor shall make every effort to reduce the amount of potentially hazardous waste generated by the CTDOT when maintaining the bus in accordance with the procedures contained in the manufacturer's maintenance manuals. The manufacturer shall use all LED

lighting, cleanable filters, and non-asbestos brake blocks and gaskets. In accordance with Section 6002 of the Resource Conservation and Recovery Act the Contractor shall use, whenever possible and allowed by the specifications, recycled materials in the manufacture of the bus.

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

### **3- Basic Body**

The bus shall have a clean, smooth, modern design. The bus height shall not exceed 130". 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 interior of vehicle is prevented by other means, then rear cap panels may be lapped otherwise. The windows, hatches, and doors shall be able to be sealed. Accumulation on any window of the bus of spray and splash generated by the bus's wheels on a wet road shall be minimized.

All body panel connections to frame shall have body adhesives and sealants applied to the entire contact surface of panel to preclude corrosion between panel and structure.

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

The bus shall withstand a 25 mph impact by a 4,000 lb automobile at any point, excluding doorways, along either side of the bus with no more than 3" 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" from ground level shall withstand a static load of 2,000 lb applied perpendicular to the bus by a pad no larger than 5" square. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the bus.

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

Exterior protrusions, greater than ½" and within 80" of the ground, shall have a radius no less than the amount of the protrusion. The exterior rearview mirrors and required lights and reflectors are exempt from the protrusion requirement. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize the ability of unauthorized riders to secure footholds or handholds.

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

Lower exterior panels within 28" above ground level shall be equipped with removable resilient, impact resistant panels for protection against minor impacts and scratches. The panels shall withstand impacts of

200 foot-pounds of energy from a steel-faced spherical missile no less than 9" in diameter without any visible damage to it or underlying panel and structure. The panels shall be no greater than 8' in length and shall be easily replaced by a mechanic in less than ten (10) minutes. The panels shall be color impregnated to complement color and paint scheme.

The bus flooring, sides, roof, understructure, axle suspension components shall resist corrosion or deterioration from atmospheric conditions and road salts for a period of twelve (12) years or 500,000 miles whichever comes first. The bus shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided that it is maintained by CTDOT in accordance with the procedures specified in the Contractor's service manual. With the exception of periodically inspecting the visible coatings applied to prevent corrosion and reapplying these coatings in limited spots, the Contractor shall not require the complete reapplication of corrosion compounds over the life of the bus.

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

All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. Representative samples of all materials and connections shall withstand a two (2) week (336 hours) 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%.

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

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

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

#### **4- Bulkhead / Firewall**

The passenger area shall be separated by a bulkhead(s) that shall, by incorporation of fireproof materials in its construction, be a firewall. This firewall shall preclude propagation of a fire into the passenger compartment and shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed. Any passageways for the climate control system air shall be protected by fireproof material. Piping through the bulkhead shall have copper, brass, or fireproof fittings sealed at the firewall with copper or steel piping on the forward side. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall. Access panels in the firewall shall be fabricated of fireproof material and secured with fireproof fasteners. These panels, their fasteners, and the firewall shall be constructed and reinforced to minimize warping of the panels during a fire that will compromise the integrity of the firewall.

## 5- Towing and Jacking

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

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

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

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

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

## 6- Floor

The floor seam must lap up the sidewall. The floor deck may be integral with the basic structure or mounted on the structure securely to prevent chafing or horizontal movement and designed to last the life of the bus. Sheet metal screws shall not be used to retain the floor and all floor fasteners shall be serviceable from one side only. The use of adhesives to secure the floor to the structure shall be allowed only in combination with the use of bolt or screw fasteners and its effectiveness shall last throughout life of the coach. Tapping plates, if used for the floor fasteners, shall be no less than the same thickness as a standard nut and all floor fasteners shall be secured and protected from corrosion for the service life of the bus. The floor deck shall be reinforced as needed to support passenger loads. At GVWR, the floor shall have an elastic deflection of no more than 0.60" from the normal plane. The floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation. Floor, with coverings applied, shall withstand a static load of at least 150 lb applied through the flat end of a 1/2" diameter rod, with 1/32" radius, without permanent visible deformation.

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

The floor shall consist of the subfloor and the floor covering. The floor, as assembled, including the sealer, attachments and covering shall be waterproof, non-hygroscopic, and impervious to mold growth. The subfloor shall be Space-age Synthetics Thermo-Lite or equal composite flooring material that will provide a minimum 150 lb weight savings per bus to the standard 3/4" marine plywood subfloor product. The composite material shall be waterproof and will not rot, warp, mildew, allow mold growth, split, soften or delaminate, will accept standard tooling and hardware, cannot be damaged by insects and should last the life of a twelve (12) year bus.

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

## 7- Operator Area

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

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

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

## 8- Wheel Wells

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. Tire chain clearance shall be provided in accordance with SAE J683. Wheel well chain guards shall be provided as an option.

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

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

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

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

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

## **9- Rain Gutters**

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

## **10- License Plates**

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

## **11- Mud Flaps**

Splash aprons, composed of ¼" minimum composition or rubberized fabric, shall be installed behind and/or in front of wheels as needed to reduce road splash and protect under-floor components. The splash aprons shall extend downward to within 4" of the road surface at static conditions. Apron widths shall be no less than tire widths, except for the front apron that shall extend across the width of the bus. Splash aprons shall be bolted to the bus understructure. Splash aprons and their attachments shall be inherently weaker than the structure to which they are attached. The flexible portions of the splash aprons shall not be included in the road clearance measurements. Other splash aprons shall be installed where necessary to protect bus equipment.

## **12- Exterior Access**

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

## 13- Batteries (coach)

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

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

The battery compartment or enclosure shall be vented and self-draining. It shall be accessible only from outside the bus. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from the electrolyte and gases emitted by the battery, and from snow, slush, salt spray, mud, etc. generated from environmental conditions outside the vehicle. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals from shorting on the door if the door is damaged in an accident or if a battery comes loose.

## 14- Service Compartment Lighting

Lights shall be provided in all compartments, where service may be required, to generally illuminate the area for night emergency repairs or adjustments. Sealed LED lamp assemblies shall be provided in these compartments and shall be controlled by a switch located near the access door to the compartment.

## 15- Bumpers

Bumpers shall provide impact protection for the front and rear of the bus with the top of the bumper being 28½" above the ground. Bumper height shall be such that when one bus is parked behind another, a portion of the bumper faces will contact each other.

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

No rear part of the bus, including the bumper, shall be damaged as a result of a 2 mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus. The bumper shall return to its pre-impact shape within ten (10) minutes of the impact. When using a yard tug with a smooth, flat plate bumper 2' 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" high, and at accelerations up to 2 mph/sec. The rear



bumper shall protect the bus, when impacted anywhere along its width by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 lb 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 from standing on the bumper. The bumper shall be independent of all power systems of the bus and shall not require service or maintenance in normal operation during the service life of the bus.

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

## **16- Exterior Lights**

All exterior lights shall be designed to prevent entry and accumulation of moisture or dust, and each lamp shall be replaceable in less than five (5) minutes by a mechanic. Commercially available LED lamps shall be used. Lights mounted on the rear compartment doors shall be protected from the impact shock of door opening and closing. Lamps, lenses and fixtures shall be interchangeable to the extent practicable. Two (2) hazard lamps at the rear of the bus shall be visible from behind when the rear service doors are opened. Light lenses shall be designed and located to prevent damage when running the vehicle through an automatic bus washer. Lights located on the roof and sides (directionals) of the bus shall have protective shields or be of the flush mount type to protect the lens against minor impacts.

Exterior clearance lights shall be constantly on during bus operation with DRL headlamps.

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

## **17- Reverse Warning**

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

## **18- Trim**

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

## **19- Interior Finished Surface**

Interior surfaces more than 10" below the lower edge of the side windows or windshield shall be shaped so that objects placed on them fall to the floor when the coach is parked on a level surface. The entire interior

shall be cleanable with a hose, using a liquid soap attachment. Water and soap should not normally be sprayed directly on the instrument and switch panels.

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

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

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

## 20- Driver Convenience

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

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

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

## 21- Driver Safety

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

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

An Operator's protective safety barrier, to act as a movable and adjustable partition between the operator's area and passengers, shall be included as a line item option. Full descriptions and pricing shall be provided with the Proposal. Final installation options to be determined at PPM.

## 22- Modesty Panels

Sturdy divider panels constructed of durable, unpainted, corrosion-resistant material complementing the interior trim shall be provided to act as both a physical and visual barrier for seated passengers. Modesty panels shall be located at doorways to protect passengers on adjacent seats, and along front edge of rear upper level. Design and installation of modesty panels located in front of forward facing seats shall include a handhold/grab handle along its top edge. These dividers shall be mounted on the sidewall and shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats. Modesty panels shall extend no higher than the lower daylight opening of the side windows and those forward of transverse seats shall extend downward to a level between 1½" and 1" 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" clearance between the modesty panel and the opened door to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails (see Section 5.4.5.2). The modesty panel and its mounting shall withstand a static force of 250 lb applied to a 4" by 4" area in the center of the panel without permanent visible deformation. A clear Plexiglas wind screen shall be provided on the modesty panel located in front of the curb side seats directly behind the rear door.

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

## 23- Energy Storage System

Electric bus batteries shall be Lithium Ion or CTDOT-approved equal. Lithium Ion batteries shall comply with UN/DOT 38.3 and/or SAE J2464 requirements. Proposals shall include all safety standards followed in the design and manufacture of the battery system, safety testing procedures used to validate the safety of battery operation in this application, and documented results of safety testing to confirm that standards have been met. Contractors shall include certification of battery safety testing by an independent testing agency. If alternative batteries are proposed, the bus/battery combination must have cleared Altoona testing for that combination.

Batteries shall be modular by design. The batteries shall be mounted in an enclosure that permits ease of servicing. The enclosure shall be designed to prevent any leaked substance from escaping. An over-temperature battery protection system shall be provided to alert the driver of potential battery failure. The energy storage system and enclosure shall be designed to eliminate potential shock hazard to maintenance personnel performing work on the system. Safe access to each battery pack shall be specified by the propulsion system supplier. Hazard warnings shall be visible on the inner cover or panel and hazard warnings shall remain visible with cover open. Each battery module or assembly of modules shall be easily removed from the bus, and reinstalled, by a single technician. Batteries shall be easily removed from or reinstalled to the bus by a single technician using a common OSHA-approved lifting device or forklift attachment connected to factory-installed lift points.

The energy storage system shall be factory-tested, ready for service and have a SOC of 100% at time of delivery (BOL).

Batteries shall not degrade (SOH) to less than 80% of their original intended certified capacity during the first eight (8) years of transit service, and are expected to remain in full service for a minimum of twelve (12) years. After eight (8) years the batteries, or any subpart of such, shall be warrantable at a pro-rated exchange rate to be agreed upon at time of contract (EOL).

The expected SOH and life cycle cost projections shall be clearly explained in the bid package. The design life of the batteries shall be at least twelve (12) years and if battery replacement is anticipated prior to this then the warranty shall cover full replacement cost.

As a line item option, vendor shall provide a one-time present-value cost for a full battery replacement at any point after the six (6) year life of the bus. Replacement batteries shall have the same or better capacity and range as the set being replaced.

The bus manufacturer agrees to be fully responsible for the safe receipt and disposal of any battery cores resulting from purchased replacements, exchanges under warranty, or for any reason not stated. For fifteen (15) years from the BOL date, the bus manufacturer will offer "Cradle-to-Grave" battery disposal, in that they agree to be fully responsible for the safe receipt and disposal of any battery cores for any reason.

The manufacturer shall continue to stock compatible battery or battery assemblies of equal or greater range for the bus for up to twelve (12) years from the initial BOL date. Where possible, a modular design shall be forward compatible in that all newer designs, formulations, capacities and configurations can be installed for the life of the bus.

A battery shall always fail in a manner to render the battery harmless to its environment.

Any components deemed failed under regular or extended warranty will be replaced with an equal of the latest compatible product in its class.

Electric bus batteries shall be installed as isolated as possible while considering of primary importance passenger safety followed by the overall weight distribution of the vehicle. The results of such testing shall be provided with the bid package along with all notes and certifications. Failure of any cell or subpack shall render the cell or subpack harmless to its environment, as well as not cause a cascade failure in the battery system. Failed batteries shall not cause any harm to adjacent batteries and shall be replaceable, as a whole or in part, by a trained property technician.

The Contractor must demonstrate, through documented third party testing, that batteries do not compromise passenger safety resulting from impact crashes, vehicle rollover, and/or battery system component failure (including but not limited to puncture, fire, overheat, overcharge).

No type of on-board, propulsion-linked range extender technology is permitted, including but not limited to internal-combustion engines, gas turbines, gas compression and/or hydrogen fuel cells.

The State Of Charge (SOC) indicator for the drive batteries shall be easily read by the driver on a convenient dash-mounted display or gauge in the driver's view capable of showing both the "SOC percentage" and "Remaining Miles of Range".

The bus must be able to be charged from charging receptacles located behind the rear axle on both the driver and passenger side of the bus. Each location should use similar charging receptacle controls and layouts.

## 24- Electrical Charging Infrastructure

The charging system and its support systems shall be designed to allow the bus to be quickly recharged.

Charging systems shall be defined as two (2) types:

- Overnight – accomplished inside the home bus depot and have the following requirements:
  - Effective charging rate of no less than 120 kW based on the manufacturer's specification.
  - The charger shall be SAE J1772 Combined-Charging System (CCS) Type 2.0 DC Fast Charger compatible and conform to all CCS SAE protocols. Charge connections shall be made manually using CCS Combo 2 type connectors.
  - All overnight charging shall normally occur in a six (6) hour interval, usually from 11:00 pm to 5:00 am, but timing shall be programmable from a central console in the bus depot's operational office.
  - Charging systems shall be capable fully recharging bus battery systems during this time.
  - Charging system will also support a preconditioning of up to one (1) hour immediately before bus departure for each electric bus to establish an optimal cabin temperature and bus operational state.
  - Contractor shall provide all annual costs for required software, licensing, communications, and operational costs required for bus charger operations. Contractor shall also provide a one-time all-inclusive cost for twelve (12) years of same.
  - A minimum of fifteen (15) chargers will be supplied, with ten (10) chargers installed in the Hamden Bus Depot and five (5) chargers installed in the Stamford Bus Depot. Contractor shall provide line-item option costs for additional chargers with appropriate control system software and communications.
  - Overnight chargers shall have a centralized, single, programmable charging system operated by charger management software from a central console by CTDOT's staff. Charger management software shall have the minimum following functions: commence charge at specific time; terminate charge at specific time; inquire as to each BEB SOC; start precondition charging up to an hour before programmable departure time.
  - Overnight chargers must be capable of charging any SAE J1772 CCS-compliant vehicle.
  - Overnight chargers shall fully recharge the range of the bus battery pack, but also allow for bus preconditioning in a manner such that the BEB leaves the bus depot with no less than a 98% SOC.
- Opportunity – "Opportunity" charging shall be accomplished at any location equipped with an overhead electric bus charger
  - An opportunity charger shall have an effective charging rate of no less than 450 kW as per manufacturer specifications.
  - Charger will be SAE J3105 compliant for Overhead Chargers.

All shall meet all the design requirements of the bus as outlined in this document.

All systems shall be designed to have a minimum MTBF of 10,000 hours and a MTTR of less than 48 hours. The system shall be fail safe and an FMEA to component level as well as a PHA must be performed and the reports submitted to the PM.

The Contractor may select from one of two (2) design methodologies for BEB configurations:

1. The "Overnight" configuration - all buses shall be equipped with rechargeable battery packs containing enough energy capacity as to power the bus a minimum of 240 miles on the initial overnight charge in an 18-hour shift, as defined by Altoona testing and the manufacturer's technical specifications; or
2. The "Opportunity" configuration - all buses shall be capable to operate a minimum of 240 miles per day in an 18-hour shift using combination of charging events:
  - a. At least 120 miles range resulting from an overnight charge of onboard batteries, and,

- b. Subsequent opportunity charges for the remaining 120 miles using an overhead charger with the following operational parameters:
  - i. No more than four (4) opportunity charges in an 18-hour shift;
  - ii. No less than 30 miles of additional range per opportunity charge;
  - iii. No less than 90 minutes between opportunity charges;
  - iv. No single charge time of more than fifteen (15) minutes at an opportunity charger; and,
  - v. Opportunity charging must be capable of unattended operation and remote monitoring during the charge interval.
  - vi. Passenger cabin temperature shall remain in a range from 60-80°F during the charge interval if the ambient temperature is between 15-95°F.
- c. Location of overhead opportunity charger(s) shall be jointly determined by the Contractor and CTDOT.
- d. CTDOT will assume all costs for opportunity charger(s) permitting, design, sitework and associated infrastructure required to power the charger(s). All of these tasks will be accomplished by CTDOT's forces with Contractor's technical assistance. Contractor will be responsible for delivery, installation, testing and commissioning of charger(s).
- e. Contractor shall propose full initial overhead charger information at locations mutually agreeable to both the Contractor and CTDOT. Proposed locations must have State or Utility agency site control and be of sufficient design parameters to accommodate the charger(s).
- f. Contractor should be aware that inclusion of overhead opportunity charger will be considered during bid scoring in the Cost category.

## 25- Propulsion

The propulsion system shall operate smoothly and quietly, with minimal vibration and noise transmission to the passenger seating areas. The propulsion system shall be designed and configured to minimize driveline power losses and maximize vehicle range. The propulsion system drive components shall consist of direct-drive electric traction motor(s) or equivalent. Either hub-mounted motors or a T-drive differential axle assembly, or equivalent, will be considered by CTDOT.

All motor and drive assemblies shall be designed to operate as efficiently as possible for the design life of the bus while withstanding water spray and road treatments found in the Northeast, as well as extreme heat, without experiencing a catastrophic failure for a minimum of 500,000 miles or eight (8) years. Each motor shall be designed for high power density; therefore each motor shall have forced oil or water cooling.

Each drive motor or set of motors shall be able to produce the necessary torque to break away, accelerate and decelerate a fully loaded transit bus with the minimum power and durability equivalent of a 500hp diesel engine. Waste heat from these devices shall be used for passenger compartment where possible. The motor(s) shall be serviceable and replaceable by CTDOT's technician at CTDOT's service depot.

Gradability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating. The propulsion system and drive train shall enable the bus to achieve and maintain a speed of 40 mph on a 2½% ascending grade and 7 mph on a 16% ascending grade.

The bus acceleration shall meet the requirements as listed in the APTA "Standard Bus Procurement Guidelines" and the FTA Altoona Bus Testing Standards. The operating range of each bus when run on the transit coach duty cycle shall be at least 250 miles.

Sensors integral to motor functionality (i.e. temperature, speed, amperage, etc.) shall be easily replaceable and serviceable. Sensor failure while in transit shall not immediately disable the bus but allow for a safe and controlled shutdown in the form of a warning light and sound.

The BEB shall be able to achieve either of the following operating formats:

- Long-Range Charging - attain a minimum of 250 miles on a single overnight depot charge while operating in "Transit Bus Duty Cycle" in the ambient temperature ranges specified with no auxiliary or range extending devices.;
- Opportunity Charging - attain a minimum of 150 miles on a single overnight depot charge while operating in "Transit Bus Duty Cycle" in the ambient temperature ranges specified with no auxiliary or range extending devices, augmented by Opportunity Charging events of at least 40 miles range in less than ten (10) minutes. The opportunity charging system shall be designed to have a minimum MTBF of 10,000 hours, and a MTTR of less than 48 hours. The system shall be fail-safe.

Typical operating conditions for these operating formats shall include:

- Between ½ and a full passenger load
- Up to a top speed of 65 mph
- An ambient temperature between 0°F and 100°F
- For up to each ½ mile, the vehicle stops for ten (10) seconds with doors open

The Contractor must demonstrate, through documented testing and implementation in a verifiable transit system duty cycle, that the BEB design meets the specifications herein without exceeding Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating (GAWR), manufacturer's specified maximum axle rating for both front and rear axles, and the bus tire and rim manufacturers' maximum weight rating at the maximum stated loading of seated and standing passengers. In addition, Federal and State weight limits for both individual axle weights and gross vehicle weight for a fully-loaded, two-axle transit vehicle with idle-reduction technology must not be exceeded. CTDOT reserves the right to weigh one or more BEB's to verify weights before accepting delivery.

The BEB energy storage and drivetrain shall recover power returned through propulsion motor regenerative braking with minimal losses due to system design or otherwise.

Since lithium-based storage devices have charging speed limitations, capacitors may be used for this purpose in addition to other processes. Capacitors may be used for torque required during initial vehicle launch and effective regenerative braking power recovery only. All ratings and design integration should be fully disclosed.

In the case of a bus breakdown away from the depot CTDOT considers towing to be a first-resort policy to remove the vehicle from the road as quickly as possible.

The propulsion system and drivetrain shall provide power to enable the bus to meet the defined acceleration, top speed, and gradability requirements, and operate all propulsion-driven accessories. The buses shall be capable of achieving a top speed of 68 mph on a straight, level road at GVWR with all accessories operating.

When releasing the brake pedal from a stopped position the bus shall not roll in the opposite intended / selected direction of travel for any reason.

## **26- Propulsion Systems Management**

The electric bus energy storage and propulsion management system shall have complete oversight, control and reporting capabilities for no less than charging, equalizing and thermally managing each battery cell or subpack for the purpose of long life, maximum range and safety. The management system shall optimize bus performance; health-monitor bus systems; record performance parameters, all while

minimizing potential bus damage. Propulsion management software algorithms accommodate driver input, vehicle speed and velocity in order to maximize drive motor efficiency and vehicle range.

The propulsion management system shall be tuned when delivered to provide optimized performance as specified above. All related components and configurations that affect vehicle range shall be selected accordingly.

The management system shall have the following safety features:

- While bus is charging:
  - No movement of the bus is allowed
  - The bus may not be shifted into forward or reverse
  - The park brake must be applied and remain applied
- While bus is operational:
  - Driver cannot shift directly from Forward to Reverse, Reverse to Forward or out of Neutral without a full service brake application.

The battery management system shall employ separate 12V / 24V circuitry for the purpose of operating lighting and accessories rated for those voltages as well as to provide charging current to the AGM coach batteries.

Low voltage and high voltage systems shall be completely separated with the exception of any charging circuitry and associated communication system. CTDOT requests notification of any separate systems solely for the purpose of monitoring the relationship of the high and low voltage systems with the ability to detect infiltration and automatically open the high voltage circuits. There shall be provisions for manually disconnecting either high or low voltage systems with switches clearly marked and easily accessible. Automatic and manual high voltage safety interlocks shall be integrated into every serviceable high voltage component. Diagnostic software shall provide codes and repair scenarios for each specific component in the system.

All propulsion system components shall be mechanically isolated to minimize transfer of vibration to the body structure. Mounts shall control movement of the electric motors so as not to affect performance of accessories or cause strain in piping and wiring connections.

Battery and propulsion systems shall allow the bus to operate smoothly and transparently with no jerking. This requirement shall be achieved regardless of driver actions under continuous acceleration.

The propulsion management system shall not allow any obvious derate of power, except in the event of low SOC, in which case a reserve amount of power shall be available as a "limp" mode for the purpose of returning the bus to the depot. "Limp" mode shall be defined as continuing vehicle operation for a limited time when SOC drops below 5%, but shall also be programmable by CTDOT in a range between 2% - 9% SOC.

In the event of any bus system fault conditions which do not present an immediate safety risk, the bus shall not become immediately disabled but shall allow for a safe and controlled shutdown with the driver being notified by both a warning light and sound in order to allow the driver to bring the bus to a complete and safe stop in a non-hazardous location.

The control system will monitor the operation of the vehicle during derated performance mode to minimize the possibility of permanent damage to the bus.

The bus shall be equipped with vehicle stability control. No bus system shall cause any loss of bus stability control. The bus regeneration system shall accommodate less than optimal driving conditions and continually minimize regeneration losses. A driver of average skill shall be able to control the bus within a 10ft. wide lane during acceleration, coasting or braking in any weather condition.



Regenerative braking operation and performance shall approximate retarder operation in a diesel bus. No manual override is permitted.

Technicians shall be able to access all bus systems via data logger, wireless, or other common communications techniques. System software shall be made available to the procuring property for the purpose of maintenance and repair. Software upgrades shall be provided to the property at no extra charge for the service life of the bus.

Electric drive motors shall be bidirectional in both forward and reverse driving modes, with the ability to recover a maximum of the kinetic energy during deceleration.

Battery thermal management equipment must be powered from an onboard source at all times, with appropriate safety interlocks to maximize the safety of the bus and its occupants. Battery thermal management must be active during all charging events, and must be able to abort charging events and notify maintenance personnel or equivalent.

Battery temperatures must never exceed the manufacturer's recommended range during operation in the design operating profile and specified ambient conditions. Battery cooling must be sufficient to prevent battery temperature from exceeding the battery manufacturer's recommended maximum temperature to meet all weather conditions.

The batteries shall be load-distributed within the bus to equalize weight between the wheels on the same axles and to achieve appropriate weight distribution between axles so as not to adversely affect handling of the bus. All vehicle gross & axle weights shall conform to State and Federal regulation, as well as axle and tire manufacturer specifications.

The bus body shall be designed and constructed to ensure passengers, operator and emergency response personnel shall not be exposed to electrical current either during normal operation or in the event of a vehicle emergency. The manufacturer shall provide training to all relevant personnel on how put the bus into a "safe" mode for elimination of shocking hazards. Analysis and test data shall be provided documenting this.

The energy storage system shall be designed and constructed to prevent gassing or fumes from the energy storage system from entering the interior of the bus, i.e., a vent path to the exterior, preferably at or above the roof, rearward.

## **27- System Safety**

Casual contact with components that have a sufficient voltage potential to cause bodily injury shall not be possible with an access service door closed. No passenger, driver, maintainer, or passerby shall be able to contact such equipment without overriding high voltage interlocks. All access covers for such enclosures and compartments shall be permanently labeled with the "DANGER-HIGH VOLTAGE" (or equivalent symbols) signs and /or labels. Exterior labels shall have industry-standard lettering not less than 1" nor more than 2" in height and shall be placed to clearly indicate the locations of the hazards to which they refer. It shall not be possible for personnel to contact with high voltage devices with the access covers closed. For maintenance purposes, any devices containing high-voltage circuits (maximum circuit operating voltages above 50VDC or 50VAC) shall be contained within protective enclosures or enclosed bus body compartments. Appropriate warning signs and labels shall be used to alert maintenance and emergency personnel to the presence of high voltage batteries and cabling within the bus. Ground fault detection circuit(s) shall be provided to monitor insulation integrity between the high voltage circuit components and the bus chassis. High voltage harnesses shall be identified as such by the color Orange. Inverters, converters or other high voltage controllers and energy storage devices shall be designed so that

accessing the devices or disconnecting them removes power (de-energizes). All systems should include fail-safe circuit protection.

In the event of a failure of the battery thermal management system while charging, the charge system shall be disabled and a visual alert shall be activated on the dashboard, as well as notification to a central office. Resetting the system shall require the deliberate action of maintenance personnel. In the event of a failure of the battery thermal management system during bus operation, an audible and visual alert shall be activated on the dashboard as well as notification to a central office. Resetting the system shall require the deliberate action of maintenance personnel. In the event of a fire onboard a bus, the battery thermal management system shall place the battery system into a safe mode and notification shall be made to a central office.

Operation of required battery thermal management systems shall be automatically controlled under all operating and charging conditions and shall be powered by an onboard power source at all times. Thermal management shall be continuously monitored during all periods of charge and discharge with appropriate safety interlocks installed to react to adverse conditions.

Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in operator's area and the rear service compartment.

## **28- Cooling**

The cooling systems, if so equipped, shall be of sufficient size to maintain the traction motors and electronics at safe continuous operating temperatures during the most severe operations and conditions possible, and in accordance with the power electronics system component manufacturers' cooling system requirements and recommendations. The fan control system shall be designed with a fail-safe mode of "fan on." The cooling systems shall be electric hybrid fans using the latest technology and of sufficient size to maintain all propulsion systems at safe, continuous operating temperatures during the most severe operations. All cooling systems in new condition shall have an ambient capacity of at least 110° F, and all fluids associated shall be identified and easily serviceable. Fan systems shall provide a self-cleaning function, activated on initial start-up of the propulsion system as well as manually if necessary.

Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and coolant booster pumps. All low points in the cooling system shall be equipped with drain cocks.

Air vent valves shall be fitted at high points in the cooling system unless it can be demonstrated that the system is self-purging. A sight glass to determine satisfactory coolant levels shall be provided and shall be accessible by opening the appropriate compartment access door. A spring-loaded, push button type valve to safely release pressure or vacuum in the cooling system shall be provided with both it and the coolant filler no more than 48" above the ground and both shall be accessible through the same access door. The coolant boost pump shall be a magnetically coupled, brushless and seal-less design.

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

## **29- Serviceability**

The propulsion system components 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 driveline components. Two (2) mechanics shall be able to remove and replace propulsion system component assemblies in less than twenty (20) total combined man-hours. Any other component requiring service or replacement shall

be easily removable and independent of driveline removal. All fluids shall be monitored by a gauge. Gauges shall be provided in the rear component access 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.

All fluid fill locations shall be properly labeled to help ensure correct fluid is added and all fillers shall be easily accessible with standard funnels, pour spouts, and automatic dispensing equipment. All lubricant sumps shall be fitted with magnetic-type, external, hex head, self-sealing drain plugs. All fluid fillers shall not be higher than 48" above the ground. All fluid systems shall be equipped with analog gauges to indicate fluid levels.

### **30- Hydraulic**

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

Any accessory may be driven hydraulically or electrically at CTDOT's option.??

### **31- Lines and Piping**

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

All lines shall be compatible with the fluid they carry. The lines shall be designed and intended for use in the environment which they are installed, i.e., road chlorides, oils, etc. Lines shall be capable of withstanding maximum system pressures.

All lines shall be composed of steel tubing where practicable except in locations where flexible lines are specifically required. Hydraulic lines of the same size and with the same fittings as those on other piping systems of the bus, but not interchangeable, shall be tagged or marked for use on the hydraulic system only.

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

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

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

## **32- Fire Suppression**

The vehicle shall be equipped with a fire suppression system appropriate for fires of the type seen on electric vehicles, type to be determined at the pre-production meeting. The system shall be capable of being activated manually by depressing an electric switch button with a pull pin labeled "FIRE" mounted in the driver's area. An inspection door will be provided by the OEM on the bus body or the bus interior to allow for visual site inspection of the agent cylinder gauge. CTDOT technicians shall be able to perform inspections and repairs. The bus OEM (contractor) shall provide a written sign-off, including full documentation, photos, etc., supplied by the fire suppression equipment manufacturer, which confirms that all installation requirements have been met on the pilot bus fire suppression system.

## **33- Axles**

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

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

The bus shall be driven by a single heavy-duty MAN or equal axle at the rear with a load rating sufficient for the bus loaded to GVWR. Transfer of gear noise to the bus interior shall be minimized. The drive axle shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major repairs. The lubricant drain plug shall be magnetic type, external hex head. If a planetary gear design is employed, the oil level in the planetary gears shall be easily checked through the plug or sight gauge.

The drive shaft shall be guarded to prevent it striking the floor of the coach or the ground in the event of a tube or universal joint failure. Drive shaft universal joint should be clamp type, serviceable to yoke. Both front and rear axle shall have a five (5) year warranty.

## **34- Suspension System**

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

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

The suspension system shall permit a minimum wheel travel of 3" jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 3" 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

ounce travel. Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers. Suspensions shall incorporate appropriate devices for automatic height control so that regardless of load the bus height relative to the centerline of the wheels does not change more than  $\pm 1/2$ " at any point.

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

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

### **35- Kneeling**

A kneeling system shall lower the entrance(s) of the bus a minimum of 2½" during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the entrance door(s), by the driver using a three-position, spring loaded to center switch. Downward direction will lower the bus. Release of switch at any time will completely stop lowering motion and hold height of the bus at that position. Upward direction of the switch will allow the system to go to floor height without the driver having to hold the switch up. The kneeling system shall only function with doors in closed position.

An optional reverse kneeling feature shall be provided at CTDOT's option that is capable of adjusting the exit heights of both front and rear doors to 15½". When a reverse kneeling feature is provided, the three-position, spring loaded to center switch shall be modified such that release of the switch will completely stop motion and hold the height of the bus whether the bus is being lowered or being raised.

Brake and Throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion.

The bus shall kneel at a maximum rate of 1¼" per second at essentially a constant rate. After kneeling, the bus shall rise within two (2) seconds to a height permitting the bus to resume service and shall rise to the correct operating height within seven (7) seconds regardless of load up to GVWR.

During the lowering and raising operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. Brake and Throttle interlock will release in conjunction with application of service brake.

An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm will sound simultaneously with the operation of the kneeler to alert passengers and bystanders. A warning light mounted near the curbside of the front door, minimum 3" diameter, amber lens shall be provided that will blink when the kneel feature is activated. Kneeling shall not be operational while the wheelchair ramp or lift is deployed or in operation.

### **36- Wheels and Tires**

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

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

CTDOT presently leases Michelin tires of size 305/70R22.5 and would prefer to continue with these tires if possible. If not possible, CTDOT prefers Michelin tires.

### **37- Asset / Fluids Management**

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

### **38- Tire Chains**

Automatic Tire Chain System shall be provided as an option.

### **39- Steering**

Hydraulically assisted power steering shall be provided. Electric power steering shall be provided as an option. The steering gear shall be an integral type with flexible lines eliminated or the number and length minimized. The torque required to turn the steering wheel 10 degrees shall be no less than 5 ft. lbs. and no more than 10ft. lbs. Steering torque may increase to 70ft. lbs. when the wheels are approaching the steering stops, as the relief valve activates. Steering effort shall be measured with the bus at GVWR, stopped with the brakes released, drive system active on clean, dry, level, commercial asphalt pavement, the tires inflated to recommended pressure and the front wheels positioned straight ahead. Power steering failure shall not result in loss of steering control.

With the bus in operation the steering effort shall not exceed 55 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 (7) turns of the steering wheel lock-to-lock.

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

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

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

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

## **40- Brakes**

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

Service brakes shall be controlled and actuated by a compressed air system. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 50 lbs. at a point 7" above the heel point of the pedal to achieve maximum braking. The heel point is the location of the driver's heel when foot is rested flat on the pedal and the heel is touching the floor or heel pad of the pedal. The total braking effort shall be distributed among all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations

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

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

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

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

An emergency brake release shall be provided to release the brakes in the event of automatic emergency brake application. The parking brake valve button will pop out when air pressure drops below requirements of FMVSS 121.

The driver shall be able to manually depress and hold down the emergency brake release valve to release the brakes and maneuver the bus to safety. Once the operator releases the emergency brake release valve, the brakes shall engage to hold the bus in place.

## **41- Pneumatic Systems**

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

Provision shall be made to supply shop air to the bus air systems using a standard tire inflation type valve. Lincoln Air Quick Disconnect #11659 or equal quick disconnect fittings, shall be easily accessible and shall be located in the exterior rear access 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.

The air system shall be protected by a pressure relief valve set at 150psi and shall be equipped with check valve and pressure protection valves to assure partial operation in case of line failures. The air compressor shall be sized to charge the air system from 40psi to the governor cutoff pressure in less than three (3) minutes.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844 for nylon tubing if not subject to temperatures over 300°F.

Nylon tubing shall be installed in accordance with the following color-coding standards:

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

Line supports shall prevent movement, flexing, tension strain, and vibration. Copper lines shall be supported to prevent the lines from touching one another or any component of the bus. To the extent practicable and before installation, the lines shall be pre-bent on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation. Rigid lines shall be supported at no more than 5' intervals. Nylon lines may be grouped and shall be supported at 2' intervals or less.

Service air ports shall be available at front and rear of vehicle. Glad-hand coupler shall be available in the front of the vehicle as an option.

The compressor discharge line to 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' intervals or less.

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

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



## 42- Air Dryer

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

## 43- Heating, Ventilating and Air Conditioning Equipment

The HVAC unit shall be a Thermo King or approved equal.

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

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

The air conditioning portion of the HVAC system shall be capable of reducing the passenger compartment temperature from 110° to 90°F in less than twenty (20) minutes. During the cool-down period the refrigerant pressure shall not exceed safe high-side pressures and the condenser discharge air temperature, measured 6" 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 4:00 pm on August 21, shall be used. There shall be no passengers on board, and the doors and windows shall be closed.

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

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

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

After manual selection and/or activation of climate control system operation mode, all interior climate control system requirements for the selected mode shall be attained automatically to within  $\pm 2^\circ\text{F}$  of specified temperature control set-point.

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

The operator shall have full control over the defroster and heat in the operator's area. The operator shall have an independent heating system other than the defroster for the operator's area and shall have the ability to maintain a temperature range of 68° to 76°F in the operator area during the described transit

duty cycle. The operator shall be able to adjust the temperature through air distribution and fans utilizing a separate and adjustable HVAC ventilation outlet. The interior climate control system shall switch automatically to the ventilating mode if the refrigerant compressor or condenser fan fails.

Interior temperature distribution shall be uniform to the extent practicable to prevent hot and/or cold spots. After stabilization with doors closed, the temperatures between any two (2) points in the passenger compartment in the same vertical plane, and 6" to 72" above the floor, shall not vary by more than 5°F with doors closed. The interior temperatures, measured at the same height above the floor, shall not vary more than  $\pm 5^\circ\text{F}$ , from the front to the rear, from the average temperature determined in accordance to APTA Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System. Variations of greater than  $\pm 5^\circ\text{F}$  will be allowed for limited, localized areas provided the majority of the measured temperatures fall within the specified requirement.

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

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

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

The controls for the operator's compartment for heating, ventilation, and cooling systems shall be integrated and shall meet the following requirements. The heat/defrost system fan shall be controlled by a separate switch that has an "Off" position and at least two (2) positions for speed control. All switches and controls shall preclude the possibility of clothing becoming entangled.

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

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

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

The defroster supply outlets shall be located at the lower edge of the windshield. These outlets shall be unbreakable and shall be free of sharp edges that can catch clothes during normal daily cleaning. The system shall be such that foreign objects such as coins or tickets cannot fall into the defroster air outlets.

Adjustable ball vents shall be provided at the left of the operator's position to allow direction of air onto the side windows. Two (2) additional ball vents shall be located on the vertical front dash panel adjacent to the front door to allow direction of air onto the door windows and/or entrance area.

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

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

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

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

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

#### **44- Auxiliary Heater Option**

It is the CTDOT's preference to not specify any auxiliary heater, fuel-fired or otherwise. To meet performance specifications, however, an auxiliary heater option shall be offered by the manufacturer. Justification for such, as well as installation and operation information, shall be fully disclosed in the Contractor's package. In addition, any auxiliary heating system provided must meet FTA guidelines for Zero-Emission Vehicles (ZEV) transit buses.

If the bus will be equipped with an auxiliary heater, there shall be a control for the auxiliary heater in the rear access compartment. The auxiliary heater dash indicator lights shall include a green light for when system is operating; yellow light when system is in maintenance mode; red light for system failure; and, no light when the system is deactivated. The auxiliary heating system shall be equipped with a gauge or low-fuel light to indicate the level of fuel in the tank.

If a fuel tank is required, the fuel tank shall be equipped with an external, hex head, brass drain plug. It shall be at least a 3/8" size and shall be located at the lowest point of the tank. Maximum tank size shall not exceed the FTA-specified maximum in order to consider the vehicle to be zero-emission. The fuel tank shall have an inspection plate or easily removable filler neck to permit cleaning and inspection of the tank without removal from the bus. The fuel tank shall be made of corrosion resistant stainless steel or other durable and inert material and shall be securely mounted to the bus to prevent movement during bus maneuvers, but shall be capable of being removed and reinstalled by a mechanic for cleaning or replacement in 1 1/2 hours or less. The capacity, date of manufacture, manufacturer name, location of

manufacture, and certification of compliance to Federal Motor Carrier Safety Regulation shall be permanently marked on the fuel tank. The markings shall be readily visible and shall not be covered with an undercoating material.

The fuel filler shall be located 7' to 25' 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. Automatic and manual fuel shutoffs shall be provided.

The fuel filler shall be an Emco Wheaton or equal system and accommodate a nozzle that forms a locked and sealed connection during the refueling process to eliminate spills. Fuel shall not be allowed to flow into the tank unless the nozzle has been properly coupled, locked and sealed to the filler. 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.

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

## **45- Roof Ventilators**

Two (2) roof ventilators shall be provided in the roof of the bus, one (1) approximately over or just forward of the front axle and the other, approximately over the rear axle.

The ventilators shall meet FMVSS217 requirements for non-school bus applications. When open with the bus in motion, the ventilators shall provide fresh air inside the bus. Each ventilator shall cover an opening area no less than 425 sq. in. and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4", or with all four (4) edges raised simultaneously to a height of no less than 3½'. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed.

## **46- Interior Lighting**

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

Step lighting for the intermediate platform between lower and upper floor levels shall be provided and shall illuminate in all modes of operation. The step lighting shall be low-profile to minimize tripping and snagging hazard for passengers and shall be shielded as necessary to protect passengers' eyes from glare. The light source shall be located to minimize windshield glare with distribution of the light focused primarily on the passengers' reading plane while casting sufficient light onto the advertising display. High power solid-state LED strips shall be in increments of 1' sections with expectation to maintain on average 60-70% of original brightness after 60,000 hours of operation. The brightness of each individual

light fixture shall be software programmable to minimize glare. Photo sensor detects and adjusts light level automatically relative to ambient light for passenger comfort.

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

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

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

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

The light system may be designed to form part of the entire air distribution duct.

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

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

Lighting shall be programmable to minimize windshield glare at night.

## **47- Doors**

Two (2) doorways shall be provided for low-floor buses in the curbside of the bus for passenger ingress and egress. The front doorway shall be forward of the front wheels and located so that the operator will be able to collect or monitor the collection of fares. Passenger doors and doorways shall comply with ADA requirements. The door style for the low floor buses shall be slide glide.

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

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

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

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

The front door panel glazing material shall have a nominal 1/4" or 6 mm thick laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673. Glazing material in the rear doorway door panels shall be the same material, thickness and color as the side windows defined in Section 5.4.7.4.2.

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

Closing door edge speed shall not exceed 19" per second. Power close rear doors shall be equipped with a sensitive edge or other obstruction sensing system such that if an obstruction is struck by a closing door edge, the doors will stop and/or reverse direction prior to imparting a 10 lb force on 1 sq. in. of that obstruction. Whether or not the obstruction sensing system is functional it shall be possible to withdraw a 1 1/2" diameter cylinder from between the center edges of a closed and locked door with an outward force not greater than 35 lb.

Door actuators shall be adjustable so that the door opening and closing speeds can be independently adjustable. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing. The door actuators shall be rebuildable.

If powered by compressed air, exhaust from the door system shall be routed below the floor of the bus to prevent accumulation of any oil that may be present in air system and to muffle sound.

In the event of an emergency, it shall be possible to open the doors manually from inside the bus using a force of no more than 25 lb after actuating an unlocking device at each door. The unlocking devices shall be clearly marked as an emergency-only device and shall require two (2) distinct actions to actuate. The respective door emergency unlocking device shall be accessible from the entrance and exit areas. When the rear door emergency device is actuated the door interlock brake system shall apply to stop the bus. When the front door emergency device is actuated, only the door interlock throttle system shall be actuated. Locked doors shall require a force of more than 100 lb 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 or complex mechanism.

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

## 48- Fare Collection

Space, as far forward as practicable and structural provisions, shall be made for installation of a Scheidt & Bachmann USA Inc. FB50 Validating Farebox complete with all wiring requirements. Location of the

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

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

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

A dedicated, circuit-breaker protected 15 amp circuit shall be available to power the fare box. This power service shall include a grounded lead with both wires enclosed in a flexible conduit. The farebox and transfer issuing equipment will be provided and installed by each transit system after the bus is delivered to Connecticut.

## 49- Windows

The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 15 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3½' high no more than 2' in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight. Any binocular obscuration due to a center divider may be ignored when determining the 90 degree requirement, provided that the divider does not exceed a 3 degree angle in the operator's field of view. Windshield pillars shall not exceed 10 degrees of binocular obscuration. The windshield shall be designed and installed to minimize external glare as well as reflections from inside the bus.

The windshield shall be a two-piece windshield design and easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshield shall not be used. The windshield glazing material shall have a ¼" or 6 mm nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673. The glazing material shall have single density tint. The upper portion of the windshield above the operator's field of view shall have a dark, shaded band with a minimum luminous transmittance of 6% when tested in accordance to ASTM D-1003.

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

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

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

The operator's side window glazing material shall have a ¼" nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.

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

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

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

The windows shall be designed and constructed to enable a mechanic to remove and replace two (2) windows in less than ten (10) minutes.

Emergency exit and window operation instructions must be a metal plate and a fixed to the bus sidewall. The instruction must be in both English and Spanish and be mounted within 6" of the emergency handle.

Side windows glazing material shall have ¼" nominal thickness laminated safety glass. The material shall conform to applicable requirements of ANSI Z26.1 and the Recommended Practices defined in SAE J673.

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

## 50- Mirrors

The bus shall be equipped with two (2) outside rearview mirrors of unit magnification (flat), each with not less than 50 sq. in. of reflective surface, 8" x 15" 2/1 split view or equal, corrosion-resistant, on each side of the bus. The upper part of the mirror is flat and the lower portion is convex. Mirrors shall permit the operator to view the roadway along both sides of the bus, including the rear wheels.

The mirrors shall be located so as to provide the operator a view to the rear along both sides of the bus and shall be adjustable both in the horizontal and vertical directions to view the rearward scene. The rearview mirrors shall be mounted so that its lower edge is no less than 80" above the street surface and equipped with a permanent high quality weather resistant orange reflective decal.

The operator shall be able to adjust both mirrors remotely while seated in the driving position. The control for remote positioning of the mirror shall be a multi-function single switch or device that controls both the flat and convex portions of both mirrors.

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



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

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

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

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

## 51- Seats

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

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

Passenger seating capacity with this arrangement shall be no less than thirty-eight (38) for a 40' bus and thirty-three (33) for a 35' bus not including the operator with an emphasis on flexibility in design to maximize seating capacity, with the specified seating arrangement. Rearward facing seats are not acceptable.

Passenger standee capacity shall be finalized during BEB production meetings to meet operational and bus weight constraints.

Each transverse seat, except the rear seats, shall accommodate two (2) adult passengers. Thickness of the transverse seat backs shall be minimized to increase passenger knee room and bus capacity. The area between the longitudinal seat backs and attachment to the bus sidewalls shall be designed to prevent debris accumulation.

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

All seat assemblies must have a direct or indirect mechanical connection with the frame or sub-frame of the bus utilizing Grade 8 fasteners, or equivalent. The passenger seat frame and its supporting structure shall be constructed and mounted so that the space under the seat is maximized to increase mobility aid maneuvering room and is completely free of obstructions to facilitate cleaning. The structure shall be fully cantilevered from the sidewall with sufficient strength for the intended service. The underside of the seat and sidewall shall be configured to prevent debris accumulation and the transition from the seat underside to the bus sidewall to the floor cove radius shall be smooth.

The seat assembly must be removable for maintenance purposes, and either removal or installation should take no more than fifteen (15) minutes.

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 5<sup>th</sup> percentile female to a 95<sup>th</sup> 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 (2) 95<sup>th</sup> percentile males striking the seat back during this 10g deceleration shall not exceed 2", measured at the aisle side of the seat frame at height. The seat back should not deflect more than 14", measured at the top of the seat back, in a controlled manner to minimize passenger injury. 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" 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" permanent deformation in the seat or its mountings.

Structural failure of any part of the seat or sidewall shall not introduce a laceration hazard. Failure of seat structure mounting hardware or mounting surface integrity shall not be allowed.

The bus shall be designed and manufactured in accordance with all applicable fire safety and smoke emission regulations. These provisions shall include the use of fire-retardant/low-smoke materials, fire detection systems, firewalls, and facilitation of passenger evacuation. All materials used in the construction of the Passenger Compartment of the bus shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Materials entirely enclosed from the passenger compartment, such as insulation within the sidewalls, need not comply. In addition, smaller components and items, such as seat grab rails, switch knobs and small light lenses, and shall be exempt from this requirement.

Passenger seats to be American Seating InSight model, or approved equal, with plush padded cushion seats forward of the rear door and standard vandal resistant padded cushion seats behind the rear door. The plush padded cushion is defined as at least 1¼" thick for the seat cushion and ½" for the seat back. Color of seat frame and back will be determined at the pre-build meeting. All applicable seat dimensions specified below shall be measured with pad fully depressed. The padded seat inserts shall be affixed to the seat body with industrial heavy-duty Velcro. A provision, such as a small grommeted hole, to allow drainage, shall be incorporated into seat insert.

Hip-to-knee room measured from the front of one seat back horizontally across the highest part of the seat to the seat or panel immediately in front, shall be no less than 28". At all seating positions in paired transverse seats immediately behind other seating positions hip-to-knee room shall be no less than 28". In order to maximize seating capacity without unduly affecting passenger comfort, minor variations in the required hip-to-knee room will be allowed in limited areas. All such areas shall be identified to the CTDOT prior to bid for approval.

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

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

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

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

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

Formed plastic seats shall be provided as an option.

## 52- Technology

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

A passenger-facing WiFi system, operating independently of other bus communications systems consisting of the latest WiFi technology, shall be provided as an option. Provisions for the system to be owner-configurable, i.e. bandwidth throttling, etc., shall be included.

An on-board infotainment monitor(s) system for the purpose of displaying route information, bus stop schedules, security camera views, local advertising etc. shall be offered as an option.

## 53- Passenger Assists

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

Excluding those mounted on the seats and doors, the assists shall have a cross-sectional diameter between 1¼" and 1½" or shall provide an equivalent gripping surface with no corner radii less than ¼". All passenger assists shall permit a full hand grip with no less than 1½" of knuckle clearance around the assist. Passenger assists shall be designed to minimize catching or snagging of clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.

Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Passenger assists shall be designed to minimize glare in the Operator's area to the extent possible (see Section 5.4.6.1.1). With the exception of seat and door handholds, all areas of the passenger assists that are handled by passengers including functional components used as passenger assists shall be of anodized aluminum or stainless steel.

Seat handholds shall be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of anodized aluminum, stainless steel, or powder coated metal. Connecting tees and angles shall be powder coated metal castings. Assists shall withstand a force of 300 lb applied over a 12" lineal dimension in any direction normal to the assist without permanent visible deformation.

All passenger assist components, including brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

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

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

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

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the transverse seat immediately forward of the rear door and on the aisle side of the rear door modesty panel(s). Passenger assists shall be provided on modesty panels that are functionally continuous with the rear door assists. Rear doors, or the exit area, shall be fitted with assists no less than ¾" in width and shall provide at least 1½" 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" from the outside edge of the rear doorway.

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

Straps or other extensions as necessary shall be provided for sections where vertical assists are not available and for the use by passengers that cannot reach to 70". Straps shall be provided in the front of the bus where the wheelchair securements are located and there is a large space between vertical assists. Overhead assists shall simultaneously support 150 lb on any 12" length. No more than 5% of the full grip feature shall be lost due to assist supports.

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

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

## 54- Noise Levels

The bus interior and exterior noise levels shall meet or exceed the requirements of the APTA "Standard Bus Procurement Guidelines." The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 80 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 accessories switched off.

The bus-generated noise level experienced by a passenger at any seat location in the bus shall not exceed 75 dBA. The driver area shall not experience a noise level of more than 70 dBA. Measurement of interior noise levels shall be taken in accordance with ISO 3381.

## 55- Bus Interior

Ceiling panels shall be white melamine-type material suitable for exterior skin painted and finished to exterior quality. Headlining shall be supported to prevent buckling, drumming, or flexing and shall be secured without loose edges. Headlining materials shall be treated or insulated to prevent marks due to condensation where panels are in contact with metal members. Moldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, aluminum, or plastic, colored to complement the ceiling material. Headlining panels covering operational equipment that is mounted above the ceiling shall be on hinges for ease of service but retained to prevent inadvertent opening. Access openings in the floor for the purpose of servicing suspension or driveline components shall be sealed to prevent entry of water into the bus interior. Flooring material on the covers shall be flush with the floor. Fasteners shall tighten flush with the floor.

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

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

Any insulation material used between the inner and outer panels shall be sealed or self-sealing to minimize entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside any compartment shall not absorb or retain oils or water and shall be designed to prevent casual damage that may occur during maintenance operations. All insulation materials shall comply with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993.

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

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

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

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

## **56- Interior Access**

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. All motors, relays, electrical components, destination signs, etc. shall easily be accessed in this manner. Removal of fixtures or equipment unrelated to the task to gain access shall be minimized.

Access doors shall be hinged, with gas-powered springs, to hold the doors out of the technician's way, unless otherwise noted. Retention of all interior access panels, except on the door actuator, destination sign door, and driver's compartments, shall be with cross-recessed head screws, or tamper proof screws. Panel fasteners shall be standardized so that one tool is required to service all special fasteners within the bus. Access doors for the door actuator compartments shall be secured with hand screws or latches and shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover.

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

## **57- Trash Can**

One 15¼" high by 10" wide by 14 ½" long black rubber waste basket shall be provided in each bus. It will be secured on the front curb-side wheel well next to the schedule rack.

## **58- Schedule Holders**

Provisions shall be made on the rear of the operator's barrier for two (2) frames to retain information that are sized 17" wide and 11" high posted by the transit system, such as notices and schedule changes. Manufacturer to be discussed. Overall size is 18.490" by 11.875" by .25".

The unit shall be fabricated from clear acrylic and display one 17" wide x 11" tall insert, and shall have openings at the bottom to reduce dust accumulation. All outside edges shall be flame polished. The unit installs with nine (9) flat head 4-40 screws.

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

## 59- Stop Request System

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

The pull cable shall be located the full length of the bus on the sidewalls at the level where the transom is located. If no transom window is required, height of pull cable shall approximate this transom level and shall be no greater than 63" as measured from floor surface. It shall be easily accessible to all passengers, seated or standing. Vertical pull cords shall also be provided between all windows in the front lower section of the bus. Pull cable(s) shall activate a solid state or magnetic proximity switch.

At each wheelchair parking position and priority seating positions additional provisions shall be included to allow a passenger in a mobility aid to easily activate "Stop Requested" signal.

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

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

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

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

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

## 60- Paint & Decals

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

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

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

#### Exterior Decals

- Handicapped Accessible Symbol
- Bus System Logo
- Bus System URL
- Bus System Telephone #
- "Seats xx"
- CTDOT logo/Operated By ...
- Stand Back When Flashing ... Wheelchair Ramp Arrow
- Bus number (Front, Back and two (2) on each side and large number on the roof)
- Wide Right Turns ...
- For Your Safety ...
- Bike Rack (Standard safety and operating instruction decals on Bike Rack)
- Two (2) Bike Maximum (only for buses with interior bike racks installed)

#### Interior Decals

- Wait for Light ... (English & Spanish)
- For your safety, ... (English & Spanish)
- No radios, smoking, etc... (English & Spanish)
- Video Camera ... (English & Spanish)
- Make seats available ...
- Bus number to be provided at four (4) locations on the interior as determined at preproduction
- "Watch Your Step" on stanchions and rear platform step
- Handicapped Accessible Symbol
- Pull Cord Signal

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

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

- A. Blisters, orange peel or bubbles appearing in the topcoat film.
- B. Chips, scratches, or gouges of the surface finish.
- C. Cracks in the paint film.
- D. Craters where paint failed to cover due to surface contamination.



- E. Overspray.
- F. Peeling
- G. Runs or sags from excessive flow and failure to adhere uniformly to the surface.
- H. Chemical stains and water spots.

To the degree consistent with industry standards for commercial vehicle finishes, painted surfaces shall have gloss and orange peel shall be minimized.

All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals.

## **61- Wheelchair Ramp**

An automatic operator-controlled front door wheelchair ramp system shall be provided to allow ingress and egress quickly, safely, and comfortably, both in forward and rearward directions, for a passenger in a wheelchair from a level street or curb into the low floor buses. OEM shall be Lift-U or approved equal.

The ramp when deployed in the street shall conform to all provisions of the then-current ADA requirements. The Contractor shall provide a plan submitted with their proposal, including layout drawings for entry, maneuvering, parking, and exiting of wheelchair passengers, to show compliance with ADA regulations. The design and construction of the bus shall be in accordance with all requirements defined in 49 CFR, Part 38, and Subpart B: ADA Accessibility Specifications for Transportation Vehicles - Buses, Vans and Systems. Ramp assembly must be able to accommodate the combined ADA passenger and mobility device weight of 1000 lb without deformation or failure.

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

The unit shall be cam driven and all components shall be constructed of stainless steel including all exposed surfaces. When the system is not in use, the passageway shall appear normal. In the stored position of the ramp, no tripping hazards shall be presented and any resulting gaps shall be minimized.

The controls shall be simple to operate with no complex phasing operations required, and the loading system operation shall be under the surveillance and complete control of the operator. The bus shall be prevented from moving during the loading or unloading cycle by a throttle and brake interlock system. The wheelchair loading system shall not present a hazard, nor inconvenience customer passage. The loading system shall be inhibited from retracting or folding when a passenger is on the ramp/platform. A passenger departing or boarding via the ramp shall be able to easily obtain support by grasping the passenger assist located on the doors or other assists provided for this purpose. The platform shall be designed to protect the ramp from damage and persons on the sidewalk from injury during the extension/retraction or lowering/raising phases of operation.

The loading platform shall be covered with a nonskid material and shall be fitted with devices to prevent the wheelchair from rolling off the sides during loading or unloading. The wheelchair ramp's finished surfaces shall be of long lasting design with no chipping or fading of color or texture and shall not require periodic maintenance for appearance purposes. Wheelchair ramp assembly shall withstand winter chlorides and normal cleaning products.

The stow and deploy speed of the ramp shall be adjustable. The device shall function without failure or adjustment for 500 cycles in all weather conditions on the design operating profile when activated once during the idle phase.

A manual override system shall permit unloading a wheelchair and storing the device in the event of a primary power failure. The ramp shall be constructed to permit the bus vendor to provide a substantial structural connection at the front edge of the ramp, between the doorposts to minimize damage to the ramp system resulting from impacts to the lower, front right hand corner of the bus. Fabrication and assembly of the wheelchair loading system shall be executed under the control of an ISO9001 registered quality assurance system. Installation must be approved by the ramp manufacturer prior to bus delivery.

## 62- ADA Securement

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

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

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

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

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

ADA priority seating signs as required and defined by 49 CFR, Part 38.27 shall be provided by the bus manufacturer 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 by the bus manufacturer. Requirements for a stop-request passenger signal in accordance with 49 CFR, Part 38.37 shall be provided by the bus manufacturer. Requirements for exterior destination signs in accordance with 49 CFR, Part 38.39 shall be provided by the bus manufacturer.

## 63- External Destination Sign System

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

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

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

The system shall consist of:

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

The Front Sign shall be mounted on the front of the Bus, near the top edge of the body, behind windshield protection, and in an enclosed but accessible compartment provided by the Bus manufacturer. Access to the front sign shall be easily and quickly attained by unlocking and opening a hinged panel large enough to allow the removal and replacement of the entire front sign assembly without further disassembly.

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

The Rear Sign (external) shall be mounted on TwinVision supplied brackets on the rear of the vehicle on an appropriate sized cutout provided by the Bus Manufacturer. An optional and additional LED third rear brake lamp indicating "STOP" that illuminates when brakes are applied shall be added at the discretion of the CTDOT. A camera integral to this assembly shall be installed for reverse operations.

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

The entire display area of all signs shall be readable in direct sunlight, at night, and in all lighting conditions between those two (2) lighting extremes, with evenly distributed illumination appearance to the un-aided eye.

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

The sign system shall be controlled by one primary controller located in the operator control unit. The system shall be capable of communicating with, and/or controlling additional information devices, such as interior information Signs, Voice Annunciation devices, etc., and must be able to be able to be

controlled by any Intelligent Transportation System (ITS) otherwise provided on the bus. The system shall provide for destination and/or Public Relations (P/R) message entry.

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

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

The various Signs shall be programmable to display independent messages or the same messages; up to two (2) destination messages and one public relations message shall be pre-selectable. The operator shall be able to quickly change between the pre-selected messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular text and route messages or displayed separately.

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

The programming software shall provide means of adjusting the length of time messages are displayed in 0.1 second increments up to twenty-five (25) seconds.

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

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

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

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

All Signs shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning. The front, side and block number signs shall be a solid framed design with an integral metal louvered arrangement for optimal optical viewing and maximum thermal dispersion.

Access shall be provided to clean the inside of the Bus window(s) associated with the Signs and to remove or replace the Sign components. Access panels and display boards shall be mounted for ease of

maintenance/replacement. Any exterior Rear Sign enclosure used shall be made of Polycarbonate material containing fiberglass reinforcement.

The vehicle manufacturer shall comply with the Sign manufacturer's recommended mounting, mounting configuration, and installation procedures to assure optimum visibility and service accessibility of the Sign System and System components.

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

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

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

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

The Block Number Sign shall be readable by a person with 20/20 vision from a distance not less than 65' and shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone. The Block Number (Run Number) sign shall be capable of displaying up to four (4) alpha-numeric characters (26 Upper Case letters and 0-9 numerals) which will be independently controlled from the Destination Sign System operator control unit (OCU keyboard) or through the J1708 command sequences. It will also be independent of the destination sign message code that is preprogrammed into the sign system.

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

The OCU Unit shall contain a display of at least two (2) lines of 20-character capability. The OCU Unit shall contain an audio annunciator that beeps indicating that a key is depressed. The OCU Unit shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above).

The OCU shall incorporate the ability to switch from "destination view" to "exterior rear sign camera view" when the bus is placed in reverse.

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

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

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

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

This software will provide capability for both standard editing mode and freestyle editing mode. The software should be capable of entering one destination for all signs and automatically place the information in the correct positioning. It should also allow for creation of a custom displays by varying spacing between characters, words, or other message elements. This software also allows for creation of graphic displays with or without text: by selecting preprogrammed graphic sign images and by allowing use of multiple fonts within the same message and graphic symbols placed anywhere within the display area. The software should be backward compatible to support all other sign configurations within the fleet that were produced by the same manufacturer. The Sign system shall be reprogrammable on the vehicle with the use of a USB Key. A key slot shall be provided on the OCU face for this purpose. The maximum reprogramming time for a 10,000 line listing shall be one minute.

## **64- Operator's Work Area**

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

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

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

The door control, kneel ramp control, windshield wiper/washer controls, and run switch shall be in the most convenient operator locations. They shall be identifiable by shape, touch, and permanent markings. Doors shall be operated by a single control, conveniently located and operable in a horizontal plane by the operator's left hand.

The kneeling ramp control shall also be located close to the door control so that it too can be operated by the Operator's left hand. The setting of these controls shall be easily determined by position and touch.

All panel-mounted switches and controls shall be marked with easily read identifiers. Text designating position (on/off) shall be a minimum of 9 points, identifying legends shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. Graphical symbols shall conform to SAE Recommended Practice J2402, Road Vehicles - symbols For Controls, Indicators, and Tell Tales, where available and applicable.

Color of switches and controls shall be dark with contrasting typography or symbols. Red type on a black or gray field (or vice versa) shall not be used. Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from the vestibule or the operator's seat. Switches, controls, and instruments shall be dust and water resistant consistent with the bus washing practice described previously.

## 65- Operator Controls

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

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

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

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

OFF - All electrical systems off, except power available for the passenger interior lighting, stoplights, turn lights, hazard lights, radio, silent alarm, horn, fare box, fire detection equipment, compartment lights, auxiliary heater, if provided and electronic equipment that require continuous energizing. A timer circuit shall be provided to provide battery cut-off (except for the farebox) after two (2) hours. Electrical loads resulting from the CTDOT's devices, such as, farebox, GPS, radio, etc., shall not exceed 1.5 amps with the master run switch in the OFF position.

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

RUN - All electrical systems and propulsion system on, except the headlights, parking lights and marker lights. Daytime running lights (DRL) shall be provided and shall be on. (Daytime running lights only on when bus is in forward mode).

NITE/RUN - All electrical systems and lighting on.

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

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

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

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

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

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

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

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

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

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

ABS Diagnostics Test	Kneel/Ramp Control
Chime	Remote Mirror Control
Drivers Fan	Public Address System
Mirror Heater (Opt.)	Diagnostic Light Panel Test
Drivers HVAC	Hill Holder
Fire Suppression	

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

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

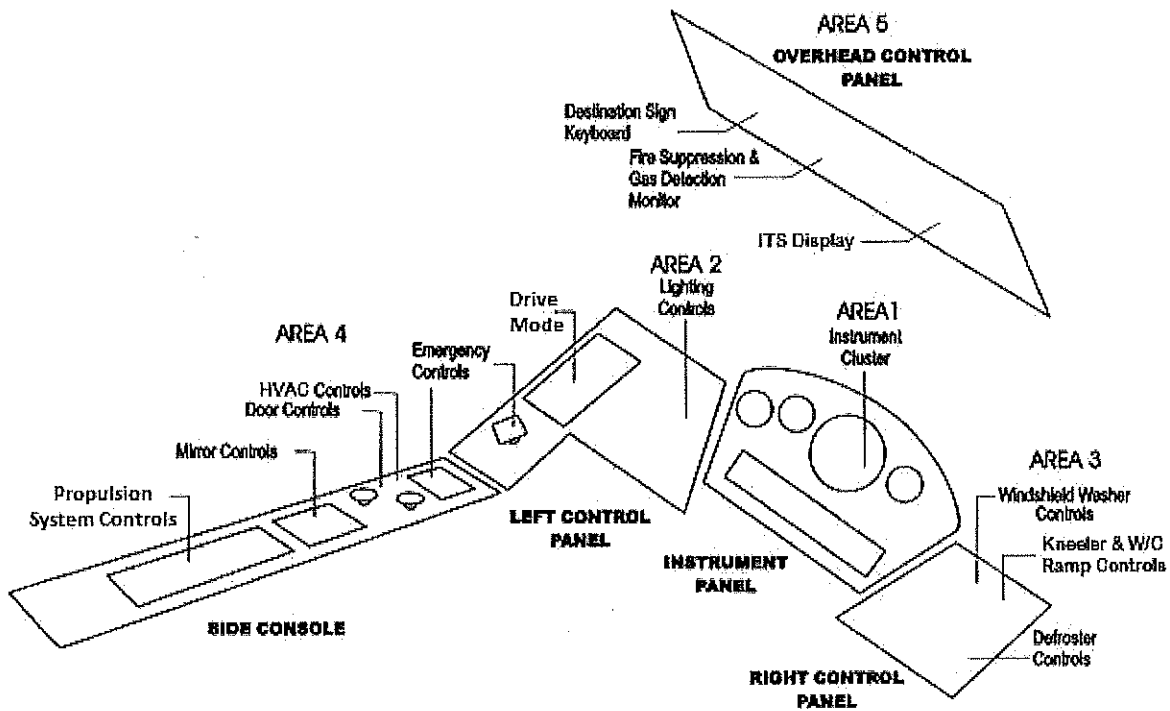


The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at a minimum of 10 ° and a maximum of 28 °. It shall be located no closer to the seat-front than the heel point of the accelerator pedal. Turn signal controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty, momentary contact switches. High Beam, Hazard, and PA Controls shall be floor mounted with the same requirements as the Turn Signal controls.

## 66- Operator Dashboard

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

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



The speedometer, air pressure gauge(s), and certain indicator lights shall be located in Area 1 Instrument Panel immediately ahead of the steering wheel. The steering wheel spokes or rim shall not obstruct the operator's vision of the instruments when the steering wheel is in the straight-ahead position.

Illumination of the instruments shall be simultaneous with the marker lamps. Glare or reflection from the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized. Instruments shall be easily readable in direct sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Instrument covers shall be non-reflective, without electrostatic qualities that attract and hold dust, and shall be resistant to scratching or hazing as a result of cleaning. Text shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. The color of the display field shall be dark with contrasting typography.

Indicator lights or illuminated symbols or typography immediately in front of the operator shall be restricted to those concerned with the operation of the vehicle, as identified in the following table.

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

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

The instrument panel shall include air brake reservoir pressure gauge(s) with indicators for primary and secondary air tanks and voltmeter(s) to indicate the operating voltage across the high and low voltage bus batteries. This area shall include a screen connected to the rear door security camera which allows the operator to see the rear door area when the door is activated. The instrument panel and wiring shall be easily accessible for service from the operator's seat or top of the panel. The diagnostic panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

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

The intensity of visual indicators shall permit easy determination of on/off status in bright sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Indicator illumination shall not cause a visibility problem at night. All indicators shall have a method of momentarily testing their operation. The audible alarm shall be tamper resistant and shall have an outlet level between 80 and 83

dBA when measured at the location of the operator's ear. Wherever possible, sensors shall be of the closed circuit type, so that failure of the circuit and/or sensor shall activate the malfunction indicator.

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

Malfunction and other indicators listed in the following table shall be supplied on all buses.

<b>Visual Indicator</b>	<b>Audible Alarm</b>	<b>Condition or Malfunction</b>
ABS	None	ABS System Malfunction
A/C Stop	None	Compressor stopped due to high/low pressure or loss of refrigerant
Check System	None	Drive System Management Trouble
Fire	Bell	Over-temperature condition in any compartment
HV System	None	High Voltage problem
System Overheat	Buzzer	Excessive system cooling temperature
Low Air	Buzzer	Insufficient air pressure in either primary or secondary reservoirs
Low Oil	Buzzer	Insufficient oil pressure / level
Low Coolant	Buzzer	Insufficient coolant level
Wheelchair Ramp	Beeper	Wheelchair ramp is not stowed and disabled

## 67- Operator Foot 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". The location of the brake and accelerator pedals shall be determined by the manufacturer, based on space needs, visibility, lower edge of windshield, and vertical H-point. The brake pedal shall have a 0-degree lateral angle, and the accelerator shall have a 12-degree lateral angle to coincide with the position of the operator's leg as it moves outward to operate the accelerator pedal.

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

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

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

An accelerator interlock shall lock the accelerator in the closed position whenever front doors are open.

## **68- Windshield Wipers**

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

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

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

## **69- Operator Seat & Seatbelt**

The Bus Operators seat shall be a Recaro Ergo Metro (3-pt) or equal. Cushions shall be fully padded with at least 3" of closed-cell polyurethane foam or material with equal properties, in the seating areas at the bottom and back. A four-way adjustable headrest with six-position vertical adjustment shall be provided. The seat material shall be black high grade vinyl or equal. Full adjustability with regards to raise / lower, slide forward / back shall be provided by simple, easy to reach pneumatic controls. Additional control over lumbar support, lean angle and firmness shall be provided. Manual unlocking and manipulation of the slide feature is required. The operator's seat shall be contoured to provide maximum comfort for extended period of time.

Design and construction to be approved by the CTDOT.

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

Seat belt webbing shall be of a high-visibility color, preferably "safety orange" or as approved by CTDOT.

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

A shoulder belt adjustment mechanism shall be provided to allow operators to extend out the exit point of the belt over the left shoulder. This is designed to relieve the constant pressure associated with this point of contact. The seatbelt shall allow free movement of the operator performing normal duties.

## 70- Electrical

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

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

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

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

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

Ultra capacitors (super capacitors) may be used in conjunction with the AGM batteries to provide effective power storage or to manage auxiliary loads.

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

A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12V & 24V) except for safety devices such as fire suppression system and other systems as specified. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds for de-activation, and prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service.

Turning the master switch "OFF", with the drive and electrical systems powered "on" shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load. The batteries shall be equipped with a single switch for disconnecting both 12V & 24V power. The power managing system shall maintain the charge on fully charged coach batteries.

Power distribution to all equipment requiring dedicated power and ground wiring to the batteries shall be accomplished by using power bus bars consisting of either a solid copper bar or heavy-duty terminal strip. One bus bar for each voltage potential, including ground, shall be located as close to the source of the potential as possible. Cabling from the bus bars to the equipment must be sized to supply the total current requirements with no greater than a 5% volt drop across the length of the cable.

All branch circuits shall be protected by circuit breakers or fuses sized to the requirements of the load. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. Any manually re-settable circuit breakers shall provide visible indication of open circuits.

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

The low voltage batteries 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 (4) ground connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded to the chassis.

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

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

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

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

All wiring harnesses over 5' long and containing at least five (5) wires shall include 10% (minimum one [1]) excess wires for spares. This requirement for spare wires does not apply to data links and/or communication cables. Wiring length shall allow end terminals to be replaced twice without pulling, stretching, or replacing the wire. Except for large wires such as battery cables, terminals shall be crimped according to connector manufacturer's recommendations for techniques and tools to the wiring and may be soldered only if the wire is not stiffened above the terminal and no flux residue remains on the

terminal. Battery cable connectors shall be crimped and soldered. All solder connections shall be made using noncorrosive rosin-core solder.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, stranded wire only shall be used. Insulation clearance shall ensure wires have a minimum of "visible clearance" and a maximum of two (2) times the conductor diameter or 1/16", whichever is less.

When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires. Base nut shall be provided on all terminal binding posts and junction block studs where the terminal junction block has not been specifically designed to eliminate the need for a base nut.

Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used it shall meet these additional requirements: include a mechanical clamp in addition to solder on the splice; the wire supports no mechanical load in the area of the splice; and the wire is supported to prevent flexing. All splicing shall be staggered in the harness so that no two (2) splices are positioned in the same location within the harness.

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

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

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

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

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

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

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

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

All plug terminals and connections shall be compatible with dielectric grease.

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

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

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

## 71- Multiplex System

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

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

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

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

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



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

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

## **72- Public Address System**

As an option the following will be provided at the discretion of the CTDOT:

A public address system shall be provided that complies with the ADA requirements of 49 CFR, Part 38.35 and enables the operator to address passengers either inside or outside the bus. Inside speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. A speaker shall be provided so announcements can be clearly heard by passengers standing outside the bus near the front door. An operator-controlled switch shall select inside or outside announcements. A separate volume control shall be provided for the outside system if volume adjustment would otherwise be necessary when switching from inside to outside. The system shall be muted when not in use.

As an option only, a hands-free Clever Devices Speakeasy II or equal microphone system shall be provided with foot-switch activation. The public address system speakers shall be Minneapolis Speaker Company model EN5WI-6WB 5" round solid basket, 8 ohm, and waterproof, mounted on an 8.25 x 8.25 square white grill, or equal. For this procurement Radio Engineering Industries (REI) waterproof public address system speakers will be provided as an approved equal.

The OEM shall provide a hand held microphone with two (2) input jack ports and mounting clips in the operator's area. Locate one port for easy accessibility for driver and locate second port for easy accessibility for tour guide. An operator-controlled switch shall be provided to allow either input jack (but not both simultaneously) to be the input to the amplifier for broadcasting over the loudspeakers on the bus without the need for any wiring modification.

## **73- Intelligent Transportation System**

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

Contractor shall supply all necessary cabling provisions and components, to make fully operational; passenger counter, CAD/AVL and radio systems by Trapeze – TransitMaster on each bus. Trapeze ITS system provisions installed by the Contractor shall be fully compatible with the systems currently in use

by the CTDOT. The CTDOT will be moving the following CAD/AVL equipment from retired vehicles to the new vehicles to complete the TransitMaster system once buses arrive at the property:

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

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

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

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

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

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

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

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

## **74- Video Security System**

A Digital Video Recording system (DVR) shall be provided in each bus. The DVR system shall be a Seon type or equal. The DVR shall be capable of recording up to sixteen (16) simultaneous or sequential continuous grayscale or color camera inputs, as well as up to eight (8) opto-isolated sensor channels. The DVR shall have the capacity for up to twenty (20) additional J1708 and J1939-compatible devices and minimum of one (1) high definition (HD) 720 pixels camera. Inputs are switched by an internal multiplexing system.

The bus digital video security recording system shall not interfere electrically with the operation of the transit bus or with its onboard electronic equipment such as the radio, farebox, propulsion system, or other electronic equipment. Furthermore, the unit shall be Federal Communication Commission listed and approved. The digital video recorder shall be installed in the electronic equipment cabinet, as

described in this document, so as to minimize its physical exposure and also to reduce shock and impact. All equipment and its installation shall be approved by the CTDOT.

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

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

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

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

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

As a minimum - The cameras shall be installed as follows:

- Facing the front door
- Facing the rear door
- Facing forward through the windshield (driver eye view)
- Facing down the aisle from the front to the back of the bus
- Located abeam the back door facing the back bus platform
- On the outside curb side of the bus behind the rear door facing forward
- On the outside curb side of the bus over the front door facing rearward
- On the outside road side of the bus over the driver's window facing rearward
- On the outside road side of the bus on the rear corner facing forward
- On the outside rear of the bus facing backward
- Over the operator area facing downward viewing the operator, dash and farebox
- Two (2) locations to be determined by the CTDOT

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

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

The DVR shall not exceed 8 lb, exclusive of removable hard drive.

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

The DVR shall be capable of withstanding shock pulses of up to 20 G-forces per 1 ms period operating and 40 G-forces per 1 ms period non-operating.

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

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

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

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

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

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

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

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

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

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

The DVR shall be equipped with the following external ports:

- (2) RJ-45 type RS-232 Communications Ports
- (1) RS-232 Serial Communications Port

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

The DVR shall have a wave module that accepts up to fourteen (14) analog color and two (2) HD color camera inputs. Every time the DVR boots, the cameras attached to the wave module are detected. This allows adjustable camera configurations. The module shall also have a separate input for an audio signal.

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

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

- ♦ vehicle speed
- ♦ left signal (directional)
- ♦ headlights
- ♦ event switch
- ♦ wheelchair lift
- ♦ door actuation
- ♦ right signal (directional)
- ♦ brake operation
- ♦ throttle position
- ♦ passenger count

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

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

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

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

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

The DVR shall be capable of communicating utilizing the Society of Automotive Engineers (SAE) "Electronic Data Interchange Between Microcomputer Systems and Heavy-Duty Vehicle Applications" standard (SAE J1708 and SAE J1587) and "Recommended Practice for a Serial Control and Communications Vehicle Network" (SAE J1939). The DVR is optionally capable of acquiring data from electronic vehicle systems, including the propulsion system, utilizing this data communication standard. The DVR and all sub-systems shall comply with SAE J1455, "Recommended Environmental Practices for Electrical Equipment Design" for vibration and shock isolation, including Section 202F. The

electronic standard is in place and accessible to an installed vehicle electronic control module (ECM) if output is available from a manufacturer's ECM.

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

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

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

The DVR shall interface with an Event switch that will be hardwired to the vehicle's panic button. When a system input such as a panic button is activated the video recording unit shall tag the event. When retrieved, the tagged event shall be easily identifiable. The system shall be activated through the transit bus master switch. When the transit bus is started, the digital recorder shall acquire data from cameras and optional pre-selected sensor parameters. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle. As available disk space is filled, new information overwrites old in a linear sequence. This linear sequence shall continue indefinitely until an event or incident occurs necessitating retrieval of stored data.

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

The DVR shall have an internal power source that can supply the DVR with power in the event of an unexpected loss of power. This internal power source must supply enough power for the DVR to perform its normal shutdown processes. This power source must be maintenance free and have an expected life of at least eight (8) years.

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

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

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

The removable drive shall be secured in place by a key lock mounted on the DVR. Total storage capacity shall be at least 2 TB, but 4 TB is preferred.

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

Duration is determined by video capture quality, drive size, and aggregate frame rate. The DVR shall support a minimum of 72 hours. with ten (10) cameras at 300 fps aggregate at standard video quality. For this procurement seven (7) cameras will be provided with an initial setting each of 15 fps.

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

The disk media shall be capable of withstanding continuous vibration (5Hz to 500Hz) and frequent shock pulses of moderate duration (up to 10ms). Recorded data must survive all typical traffic accidents as well as collisions up to 40G-forces.

Disk storage media shall be conveniently portable, easily removable and transportable.

All recorded data shall be created in a secure encrypted file format using digital cryptography. The encryption restricts access, prevents alteration and tampering, and supports the detection or attempts to alter or tamper with video images or sensor information.

Recorded data shall be viewable in read-only format on a standard PC workstation or PC laptop. Software is supplied for on-site data playback and is compatible with standard PC-based operating systems such as Windows 7. Data can be easily downloaded for long-term storage to high capacity storage media.

The DVR shall support wireless connectivity. Data from the hard drive canister shall be transferable via a compatible 802.11x wireless Ethernet Bridge or cellular modem and downloadable to a server via a wireless network. The transferred or downloaded data shall be reviewable by a workstation that has an installed copy of the vender's video reviewing software. The system shall also be capable of delivering video data and system health status information automatically to the server for review.

A desktop viewing station shall be provided to each transit system in this procurement and consist of a personal computer dedicated to playback and review of the DVR's recorded data. Minimum system requirements for the desktop viewing station are as follows:

- Microsoft Windows 7 or later current Operating System
- 2GB<sup>2</sup> Dual Channel DDR2 SDRAM at 667MHz - 2 DIMMs
- 250GB<sup>4</sup> or greater Serial ATA 3Gb/s Hard Drive (7200RPM) w/DataBurst Cache™
- ATI Mobility Radeon HD 2400 Video Card
- Integrated Gigabit Ethernet (10/100/1000Base-T)
- 32X Slot load CD/DVD burner (DVD+/-RW)
- Network interface card (NIC)
- Six (6) USB 2.0 ports
- Standard keyboard and mouse
- Audio with built-in speakers
- Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter ( docking station) that connects the DVR's removable drive to the desktop computer via a USB 2.0 connection
- A Panasonic CF-54 or equivalent notebook computer shall be provided to each transit system in the procurement to act as a portable viewing station that will be dedicated to playback and review of the DVR's recorded data. Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter that connects the DVR removable drive to the notebook via a USB 2.0 connection

The system's viewing software shall allow review of the data from the DVR's removable drive canister. It shall allow for up to thirteen (13) simultaneous, synchronized playback windows as thumbnails, with one, two, four, eight, ten or twelve plus one larger windows displayed at one time in a tiled format. It shall allow for a zoom function by means of a slide bar, double-clicking, or rubber banding. The screen shall display the Vehicle ID number, date of recorded video, display sensor information, and camera number. This option shall be capable of being turned on or off.

It shall allow for image enhancement consisting of sharpening, brightness, contrast, saturation, and hue. The DVR shall allow all image enhancements to be applied to the motion video, but shall *not* modify the original video in any manner (i.e., enhancements to a video frame continue to play on subsequent frames, but are not saved to the removable drive canister).

The DVR shall allow for archiving of all video, selected frames, or selected loops of video. The DVR shall allow for individual video frames or selected loops to be exported in JPEG, BMP, AVI or TIFF formats. The DVR shall allow for thirteen (13) synchronized channels of audio playback with multiple filter options.

The DVR shall allow searching for specific video via time and date stamps. The DVR shall allow the user to select the time and date for viewing. It is not necessary to load the entire hard drive to view a set time. Specific Events and Incidents shall also be selectable.

Each video frame shall be decoded and authenticated dynamically upon request. The DVR shall display the status as each frame is validated.

The DVR shall allow users to create custom reports.

The DVR data must be able to be accepted as evidence in criminal proceedings and civil proceedings, and be deemed to have sufficient forensic integrity to meet authentication and encryption requirements expected by the courts.

All video systems shall be delivered with the manufacturer's standard manuals for each component for the model offered.

The vendor shall provide each transit property in this procurement with any special diagnostic equipment necessary to maintain this video system.

Training shall be provided to insure satisfactory operation, servicing and maintenance of the equipment furnished. Instructions shall also include manufacturers' recommendations of test frequency, limits and methods, including downloading and transferring to a CD or DVD. When methods of access, removal, dismantling or application of a component are not self-evident, the instruction shall also cover these matters.

Training shall be provided to each transit property personnel receiving this equipment in maintenance, engineering, dispatch, and supervisory staff. Training includes maintenance procedures, installation and un-installation procedures, hard-drive / disk retrieval, and playback and data transfer.

Digital video camera systems shall include all necessary equipment for total system functionality: cameras, digital video recorders, multiplexers, converters, hard drives, cabling, operating software, all connectors and mounting enclosures.

The system shall be field-upgradeable both in hardware and software with minimal time loss and expense and be backward compatible where feasible.

The total system shall have a one (1) year parts and labor warranty. Repair and/or replacement shall be provided at no charge, during the warranty period, for parts with manufacturing defects.

Telephone troubleshooting service shall be available between 8:00am and 5:00pm Connecticut time, Monday through Friday via a toll free telephone line.



## **75- Bicycle rack**

A two (2) position Sport Works stainless steel or equivalent bicycle rack shall be provided and installed on the front of the bus using a quick release removal bracket. The standard safety and operating instruction decals are required on each bicycle rack.

## **76- Radio**

The radio to be installed on each bus shall be further specified by the CTDOT. Such radios may include a Motorola digital P-25 mobile radio or an analog Tait TM8105 mobile radio or other type designated by the CTDOT. Such radio may be purchased by the OEM, a separate Contractor, directly by the CTDOT, or as otherwise directed by that Agency.

The radio system includes an operator speaker, handset and cradle to be provided and installed by the vendor. The radio will be provided by and installed by each transit system after the buses are delivered to Connecticut, unless directed otherwise by the CTDOT. A location convenient to the operator shall be provided for the radio control head, speaker, handset, and cradle. The location shall conform to SAE Recommended Practice J287 "Driver Hand Control Reach."

For ITS equipped buses use Trapeze Kit 36T0003-103, Handset Kit: 36T0003-103. Handset Alone: 25T0128-103

## **77- Emergency Alarm**

The Covert Emergency Alarm is for the operators use in dangerous situations. The alarm shall be integrated with the radio, the External Route Display shall display "911," and the CCTV shall tag and save recordings. The alarm button shall be located on the Bus Operator Work Station lower left side wall. The driver should be able to take his/her left hand and reach over in a location near his/her knee to push it without moving or calling attention to his/her action.

The alarm button shall be a Square D #9001KR2U push button or equal. For ITS equipped buses the Covert Switch Kit: 36T0033-003. Switch Alone: 24T0058-001.

## **78- Antenna and Cable Specification**

A 762-870 MHZ 3DB LOW PROFILE MOBILE antenna, Motorola part number RAF4226A shall be provided by the vendor and installed on the bus roof at a location, by an installer, as approved at preproduction by the vendor and the CTDOT.

Provisions for attaching an antenna to the roof and routing an antenna lead to the radio compartment shall be provided. Antenna mounting shall conform to the electromagnetic suppression requirements of SAE J551. A roof mounted radio antenna requires a ground plane to prevent electronic noise being generated inside the vehicle. A metal roof can serve as a sufficient ground plane; however a fiberglass roof requires either a metallic surface, or an antenna with a virtual ground plane. To test and repair antenna connections, quick access shall be provided inside the vehicle at the point where the antenna is mounted to the roof and where the antenna cable attaches to the antenna.

An antenna cable shall be provided and installed as follows:

Run two (2) Belden 8418 (20 AWG 8 Conductor shielded) audio cables from the top of the "Streetside Closeout air/electrical" to Radio Box leaving 24" extra in Radio Box. Mark "Handset/Speaker/Spectra Mic" and "Handset/Speaker/Spectra Mic Spare." Run RG58/U Belden 8240 Coax from Antenna Access hole to radio box leaving 24" extra in radio box and 12" extra in antenna access. Run 1-20 AWG Green and 1-20 AWG Black from Terminal block in Radio Box leaving 36" coiled in the bottom of the box for the 911 system, Marked for "Silent Alarm Code Plug".

## 79- Equipment Cabinet

A lockable electronic equipment cabinet located over the front roadside wheel well shall be provided to accommodate the radio, ITS components, video security DVR system, multiplex components, power converters or inverters and any other sensitive electronic equipment deemed necessary at any time by the CTDOT.

The cabinet shall provide sufficient structural support to house all electronic equipment. It is expected to be of heavy-duty construction, built to last for the service life of the bus. The cabinet shall have a minimum of four (4) adjustable heavy-duty fully extractable slide-out trays that have user activated positive locking latches for release of the roll out shelf. The slides shall be supported by members that are welded to the structure or frame of the cabinet. A stainless steel or powder coated aluminum radio mounting plate with vibration insulators shall be installed on one of the slide-out trays designated for the radio equipment. The cabinet shall match the interior finish of the bus, and shall be approved by the CTDOT.

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

The design of enclosure shall allow for the quick and easy installation and removal of electronic equipment from within the enclosure, and all connectors shall terminate at a breaker protected bus bar.

The cabinet shall be provided with two (2) latches which automatically secure the door when closed. The cabinet shall be lockable with a standard heavy-duty keyed lock that dampens vibrations, eliminates rattles and prevents accidental opening.

The top of the electronic equipment cabinet shall act as a trash shield to prevent items from being placed on it.

The cabinet shall incorporate active cooling to protect the electronic equipment from overheating. If the cooling / ventilation system requires any periodic maintenance this procedure shall be documented.

The cabinet shall provide adequate power to safely operate all equipment and shall be designed to minimize electrical interference from other bus related electrical components. Provisions for future equipment upgrades, additional equipment and expanded use of the cabinet shall be supported.

The design and installation of the proposed cabinet shall be submitted with the bid package for review.

## 80- Training

The successful Contractor shall provide a complete outline of training for all available systems on the bus. Operator training shall consist of all pertinent knowledge for a licensed transit bus operator to safely and efficiently operate a BEB. Maintenance training shall consist of operator training plus all pertinent knowledge for a qualified technician to work on all areas of the bus. A general overview of the bus which highlights its features and differences from a standard diesel bus shall be provided free of charge by the manufacturer for each facility receiving buses from this procurement.

Operator Training- Including but not limited to a practical working knowledge of startup, pre-trip, safety precautions, dash indicators, state of charge / mileage range, emergency evacuation and safe operating procedures.

Train The Trainer- Facility Supervisors and Instructors shall have training available to them that will certify them to train new and existing operators and technicians as thoroughly and as efficiently as the OEM instructors. Assessments for all technical subject matter will be available through these programs.

Technician Training- Including but not limited to the complete Operator training program, body / frame repair, electrical system, multiplex system, high voltage interlock procedures, high voltage system service, safety equipment / PPE, suspension, diagnostic software, propulsion system, energy storage system, emergency procedures, towing and recovery, steering system and brakes.

The manufacturer shall provide high voltage training which certifies technicians to work on these systems

The manufacturer shall provide Emergency Response Guidelines and training for emergency responders. This training shall be provided once at each facility and shall include, but not be limited to, safely immobilizing a high voltage system-equipped bus, extrication, do-not-cut zones, fire personnel response.

A minimum of 100 training hours shall be included with this procurement to be used at the CTDOT's discretion. Additional training hours may be purchased by the CTDOT- all available training topics, a syllabus for each, class durations and the cost for such shall be documented for review and purchase. Online or web-based training programs shall be available for technicians as an option to instructor-led programs where practical. Pricing for pay-per-view as well as purchase shall be documented for review.

**EXHIBIT A.1**

**VEHICLE TECHNICAL INFORMATION**

# ATTACHMENT A.1

## VEHICLE TECHNICAL INFORMATION

*The Proposer shall submit a completely filled-in Vehicle Technical Information form below as part of their proposal submission. A separate form shall be checked and filled out for each different bus model proposed.*

35' Battery Electric Bus

40' Battery Electric Bus

**A. BUS MANUFACTURER**

Bus Model

\_\_\_\_\_

\_\_\_\_\_

**B. UNDERSTRUCTURE MANUFACTURER**

Model Number

\_\_\_\_\_

\_\_\_\_\_

**C. BASIC BODY CONSTRUCTION**

1. Type

\_\_\_\_\_

2. Tubing or frame member Thickness, Dimensions & Material

a. Overstructure

\_\_\_\_\_

b. Understructure

\_\_\_\_\_

3. Skin Thickness and Material

a. Roof

\_\_\_\_\_

b. Sidewall

\_\_\_\_\_

c. Skirt Panel

\_\_\_\_\_

d. Front End

\_\_\_\_\_

e. Rear End

\_\_\_\_\_

**D. DIMENSIONS**

1. Overall Length

a. Over Bumpers

\_\_\_\_\_ ft. \_\_\_\_\_ in.

b. Over Body

\_\_\_\_\_ ft. \_\_\_\_\_ in.

2. Overall Width

a. Over Body excluding Mirrors

\_\_\_\_\_ in.

b. Over Body including Mirrors - driving position

\_\_\_\_\_ in.

c. Over Tires Front Axles

\_\_\_\_\_ in.

d. Over Tires Rear Axles

\_\_\_\_\_ in.

3. a. Over all Height (maximum)

\_\_\_\_\_ in.

b. Overall Height (main roof line)

\_\_\_\_\_ in.

4. Angle of Approach

\_\_\_\_\_ deg.

5. Breakover Angle

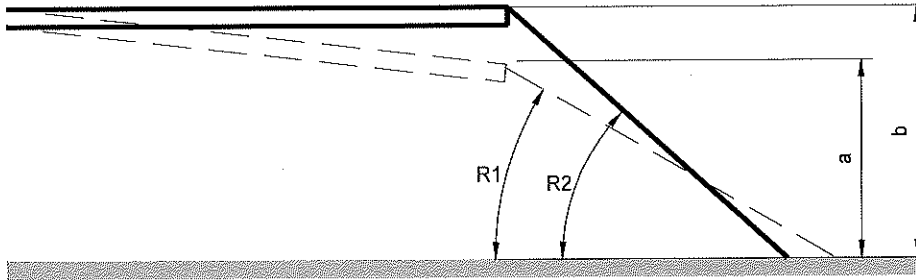
\_\_\_\_\_ deg.

6. Angle of Departure

\_\_\_\_\_ deg.

- |    |                                    |              |             |
|----|------------------------------------|--------------|-------------|
| 7. | Doorway Dimensions                 | <u>Front</u> | <u>Rear</u> |
| a. | Width Between Door Posts           | _____ in.    | _____ in.   |
| b. | Door Width Between Panels          | _____ in.    | _____ in.   |
| c. | Clear Door Width                   | _____ in.    | _____ in.   |
| d. | Doorway Height                     | _____ in.    | _____ in.   |
| e. | Knuckle Clearance                  | _____ in.    | _____ in.   |
| f. | Door Protrusion Beyond Side Panels | _____ in.    | _____ in.   |

8. Step Height from Ground (measured at center of doorway)



<u>Front Doorway, Empty</u>		<u>Ramp Angle</u>		<u>Rear Doorway, Empty</u>
(Kneeled)	a. _____ in.	R1	_____ deg.	a. _____ in.
(Unkneeled)	b. _____ in.	R2	_____ deg.	b. _____ in.
(Reverse Kneeled)	c. _____ in.	R3	_____ deg.	c. _____ in.

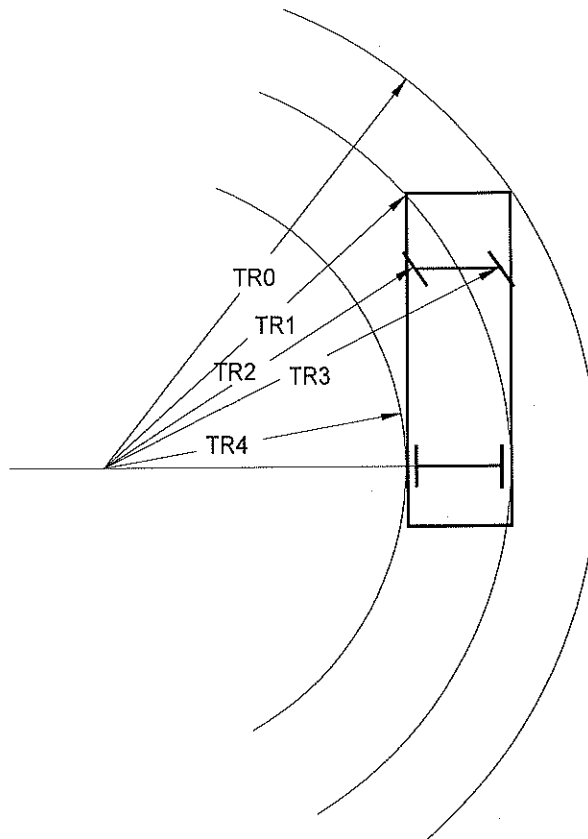
9. Interior Head Room (center of aisle)
- |    |                     |           |
|----|---------------------|-----------|
| a. | Front Axle Location | _____ in. |
| b. | Drive Axle Location | _____ in. |

10. Aisle Width Between Transverse Seats (minimum) \_\_\_\_\_ in.

11. Floor Ride Height Above Ground (centerline of bus)
- |    |               |           |
|----|---------------|-----------|
| a. | at Front door | _____ in. |
| b. | at Front Axle | _____ in. |
| c. | at Drive Axle | _____ in. |
| d. | at Rear door  | _____ in. |

12. Minimum Ground Clearance (between bus and ground, with bus unkneeled)
- |    |                 |           |
|----|-----------------|-----------|
| a. | Excluding Axles | _____ in. |
| b. | Including Axles | _____ in. |

13. Horizontal Turning Envelope (see diagram on following page)
- |    |  |           |           |
|----|--|-----------|-----------|
| a. | Outside Body Turning Radius, TR0<br>(including bumper) | _____ ft. | _____ in. |
| b. | Front Inner Corner Radius, TR1<br>(including bumper)   | _____ ft. | _____ in. |
| c. | Front Wheel Inner Turning Radius, TR2                  | _____ ft. | _____ in. |
| d. | Front Wheel Outer Turning Radius, TR3                  | _____ ft. | _____ in. |
| e. | Inside Body Turning Radius, TR4<br>(including bumper)  | _____ ft. | _____ in. |



14. Wheelbase \_\_\_\_\_ in.
15. Overhang, Centerline of Axle Over Bumper
- a. Front \_\_\_\_\_ ft. \_\_\_\_\_ in.
- b. Rear \_\_\_\_\_ ft. \_\_\_\_\_ in.
16. Floor
- a. Interior Length \_\_\_\_\_ ft. \_\_\_\_\_ in.
- b. Interior Width (excluding coving) \_\_\_\_\_ ft. \_\_\_\_\_ in.
- c. Total Standee Area \_\_\_\_\_ sq. ft.
- d. Minimum distance between Wheelhouses:
- Front: \_\_\_\_\_ in.
- Rear: \_\_\_\_\_ in.
- e. Maximum interior floor slope  
(from horizontal) \_\_\_\_\_ deg.
17. Passenger Capacity Provided
- a. Total Maximum Seating \_\_\_\_\_
- b. Standee Capacity \_\_\_\_\_
- c. Minimum Knee to Hip Room \_\_\_\_\_ in.
- d. Minimum Foot Room \_\_\_\_\_ in.

**E. WEIGHT OF BUS**

	No. of People	Front Axle			Rear Axle			TOTAL BUS
		Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel and Farebox	0							
Fully Seated Full Fuel and Farebox	_____ +Driver							
Fully Loaded Standee and Fully Seated Full Fuel and Farebox	_____ +Driver							
Crush Load (1.5xFully Loaded)	_____							
GVWR								
GAWR								

Continued on Next Page



**F. ENGINE, MAIN**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_
- 4. Electric motor type \_\_\_\_\_
- 5. Electric motor manufacturer \_\_\_\_\_
- 6. Electric motor model number \_\_\_\_\_
- 7. Net S.A.E. Horsepower \_\_\_\_\_ HP at \_\_\_\_\_ rpm
- 8. Net S.A.E. Torque \_\_\_\_\_ lb. ft. at \_\_\_\_\_ rpm
- 9. Electric drive battery chemistry  
 Nickel Metal Hydride     Lithium Ion     OTHER \_\_\_\_\_
- 10. Electric drive battery manufacturer \_\_\_\_\_
- 11. Electric drive battery model # \_\_\_\_\_
- 12. Electric drive battery rated kWh storage \_\_\_\_\_
- 13. Electric drive battery coolant type & capacity \_\_\_\_\_
- 14. Maximum Speed, no load \_\_\_\_\_ rpm
- 15. Maximum Speed, full load \_\_\_\_\_ rpm
- 16. Speed at Idle \_\_\_\_\_ rpm
- 17. Speed at Fast Idle \_\_\_\_\_ rpm
- 18. Bus performance information/graphs to be attached with this form:
  - Motor speed vs. road speed*
  - Torque vs. motor speed*
  - Horsepower vs. motor speed*
  - kWh consumption vs. motor speed.*
  - Vehicle speed vs. time (both loaded and unloaded)*
  - Vehicle speed vs. grade (both loaded and unloaded)*
  - Acceleration vs. time*
  - Change of acceleration vs. time.*

**G. TRANSMISSION (if so equipped)**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_
- 4. Speeds \_\_\_\_\_
- 5. Gear Ratios                      Forward \_\_\_\_\_ Reverse \_\_\_\_\_
- 6. Shift Speeds
  - a. 1st - 2nd \_\_\_\_\_ mph
  - b. 2nd - 3rd \_\_\_\_\_ mph
  - c. 3rd - 4th \_\_\_\_\_ mph
  - d. 4th - 5th (if applicable) \_\_\_\_\_ mph
  - e. 5th - 6th (if applicable) \_\_\_\_\_ mph
- 7. Fluid Capacity [Including heat exchanger and filter(s)] \_\_\_\_\_

**H. VOLTAGE REGULATOR**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_

**I. VOLTAGE EQUALIZER**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_

**J. ALTERNATOR**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_
- 4. Output at Idle \_\_\_\_\_ Amps
- 5. Output at Maximum Speed \_\_\_\_\_ Amps
- 6. Maximum Warranted Speed \_\_\_\_\_ rpm
- 7. Speed at Idle \_\_\_\_\_ rpm
- 8. Drive Type \_\_\_\_\_

**K. STARTER MOTOR**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_

**L. AIR COMPRESSOR**

- 1. Manufacturer \_\_\_\_\_
- 2. Type \_\_\_\_\_
- 3. Rated Capacity \_\_\_\_\_ cfm
- 4. Capacity, at Idle \_\_\_\_\_ cfm
- 5. Capacity, at Maximum Speed \_\_\_\_\_ cfm
- 6. Maximum Warranted Speed \_\_\_\_\_ rpm
- 7. Speed Idle \_\_\_\_\_ rpm
- 8. Drive Type \_\_\_\_\_ rpm
- 9. Governor
  - a) Cut-in Pressure \_\_\_\_\_ psi
  - b) Cut-Out Pressure \_\_\_\_\_ psi

**M. AXLE, FRONT**

- MAN solid beam, non-driving
- Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Type \_\_\_\_\_
- 3. Model Number \_\_\_\_\_
- 4. Gross Axle Weight Rating \_\_\_\_\_ lb.
- 5. Axle Load \_\_\_\_\_ lb.

**N. AXLE, REAR**

- MAN heavy duty
- Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_
- 4. Gross Axle Weight Rating \_\_\_\_\_ lb.
- 5. Axle Load \_\_\_\_\_ lb.
- 6. Axle Ratio \_\_\_\_\_

**O. SUSPENSION SYSTEM**

- 1. Manufacturer \_\_\_\_\_
- 2. Type: Front \_\_\_\_\_  
Rear \_\_\_\_\_
- 3. Springs: Front \_\_\_\_\_  
Rear \_\_\_\_\_

**P. WHEELS AND TIRES**

- 1. Wheels
  - a. Make \_\_\_\_\_
  - b. Size \_\_\_\_\_
  - c. Capacity \_\_\_\_\_ lb.
  - d. Material \_\_\_\_\_
  
- 2. Tires
  - a. Manufacturer \_\_\_\_\_
  - b. Type \_\_\_\_\_
  - c. Size \_\_\_\_\_
  - d. Load Range/Air Press. \_\_\_\_\_ lb./psi.

**Q. STEERING, POWER**

- 1. Pump
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Type \_\_\_\_\_
  - d. Relief Pressure \_\_\_\_\_ psi
  
- 2. Booster/Gear Box
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Type \_\_\_\_\_
  - d. Ratio \_\_\_\_\_
  
- 3. Power Steering Fluid Capacity \_\_\_\_\_ gal.
- 4. Maximum Effort at Steering Wheel \_\_\_\_\_ lb.  
(unloaded stationary coach on dry asphalt pavement)
- 5. Steering Wheel Diameter \_\_\_\_\_ in.

**R. BRAKES**

- 1. Make of Fundamental Brake System \_\_\_\_\_
- 2. Brake Chambers Vendor's Size & Part No.
  - a. Front \_\_\_\_\_
  - b. Rear \_\_\_\_\_
  
- 3. Brake Operation Effort \_\_\_\_\_
- 4. Slack Adjuster's Vendor's Type & Part No.
  - a. Front
    - 1) Right \_\_\_\_\_
    - 2) Left \_\_\_\_\_
  - b. Rear
    - 1) Right \_\_\_\_\_
    - 2) Left \_\_\_\_\_
  - c. Length
    - 1) Front Take-up \_\_\_\_\_ in.
    - 2) Rear Take-up \_\_\_\_\_ in.
  
- 5. Brake Drums/Discs
  - a. Front
    - 1) Manufacturer \_\_\_\_\_
    - 2) Part Number \_\_\_\_\_
    - 3) Diameter \_\_\_\_\_ in.
  - b. Rear
    - 1) Manufacturer \_\_\_\_\_
    - 2) Part Number \_\_\_\_\_
    - 3) Diameter \_\_\_\_\_ in.

- 6. Brake Lining
  - a. Front
    - 1) Manufacturer \_\_\_\_\_
    - 2) Type \_\_\_\_\_
  - b. Rear
    - 1) Manufacturer \_\_\_\_\_
    - 2) Type \_\_\_\_\_
- 7. Brake Lining Identification
  - a. Front
    - 1) Forward \_\_\_\_\_
    - 2) Reverse \_\_\_\_\_
  - b. Rear
    - 1) Forward \_\_\_\_\_
    - 2) Reverse \_\_\_\_\_
- 8. Brake Linings Per shoe
  - a. Front \_\_\_\_\_
  - b. Rear \_\_\_\_\_
- 9. Brake Lining Widths
  - a. Front \_\_\_\_\_ in.
  - b. Rear \_\_\_\_\_ in.
- 10. Brake Lining Lengths
  - a. Front \_\_\_\_\_ in.
  - b. Rear \_\_\_\_\_ in.
- 11. Brake Lining Thickness
  - a. Front \_\_\_\_\_ in.
  - b. Rear \_\_\_\_\_ in.
- 12. Brake Lining Area Per Axle
  - a. Front \_\_\_\_\_ sq. in.
  - b. Rear \_\_\_\_\_ sq. in.

**S. COOLING SYSTEM**

- 1. Radiator/Charge Air Cooler
  - a. Manufacturer \_\_\_\_\_ / \_\_\_\_\_
  - b. Model Number \_\_\_\_\_ / \_\_\_\_\_
  - c. Type \_\_\_\_\_ / \_\_\_\_\_
  - d. Number of Tubes \_\_\_\_\_ / \_\_\_\_\_
  - e. Tubes Outer Diameter \_\_\_\_\_ in. / \_\_\_\_\_ in.
  - f. Fins Per in. \_\_\_\_\_ Fins / \_\_\_\_\_ Fins
  - g. Fin Thickness \_\_\_\_\_ in. / \_\_\_\_\_ in.
- 2. Total Cooling and Heating System Capacity \_\_\_\_\_ gal.
- 3. Radiator Fan Speed Control \_\_\_\_\_ Type
- 4. Surge Tank, Capacity \_\_\_\_\_ qt.
- 5. Engine Thermostat Temperature Setting
  - a. Initial Opening \_\_\_\_\_ ° F
  - b. Fully Closed \_\_\_\_\_ ° F
- 6. Overheat Alarm Temperature Sending Unit Setting \_\_\_\_\_ ° F
- 7. Shutdown Temperature Setting \_\_\_\_\_ ° F

**T. AIR RESERVOIR CAPACITY**

- 1. Supply Reservoir \_\_\_\_\_ cu. in.
- 2. Primary Reservoir \_\_\_\_\_ cu. in.
- 3. Secondary Reservoir \_\_\_\_\_ cu. in.
- 4. Parking Reservoir \_\_\_\_\_ cu. in.
- 5. Accessory Reservoir \_\_\_\_\_ cu. in.
- 6. Other Reservoir Type \_\_\_\_\_ cu. in.

**U. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT**

Thermo King T-Series Rear Mount with Screw Compressor

Or equal: \_\_\_\_\_

1. Heating System Capacity \_\_\_\_\_ BTU
2. Air Conditioning Capacity \_\_\_\_\_ BTU
3. Ventilating Capacity \_\_\_\_\_ cfm
4. Compressor
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. No. of Cylinders \_\_\_\_\_
  - d. Drive Ratio \_\_\_\_\_
  - e. Maximum Warranted Speed \_\_\_\_\_ rpm
  - f. Operating Speed \_\_\_\_\_ rpm
  - g. Weight \_\_\_\_\_ lb.
  - h. Oil Capacity
    - 1) Dry \_\_\_\_\_ gal.
    - 2) Wet \_\_\_\_\_ gal.
  - i. Refrigerant \_\_\_\_\_ Type \_\_\_\_\_ lb.
5. Condenser
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. No. of Rows \_\_\_\_\_
  - d. No. of Fins/in. \_\_\_\_\_
  - e. O.D. of Tube \_\_\_\_\_ in.
  - f. Fin Thickness \_\_\_\_\_ in.
6. Condenser Fan
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Fan Diameter \_\_\_\_\_ in.
  - d. Speed Maximum \_\_\_\_\_ rpm
  - e. Flow Rate (maximum) \_\_\_\_\_ cfm
7. Receiver
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Capacity \_\_\_\_\_ lb.
8. Condenser Fan Drive Motors
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Type \_\_\_\_\_
  - d. Horse Power \_\_\_\_\_ HP
  - e. Operating Speed \_\_\_\_\_ rpm
9. Evaporator Fan Drive Motors
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Type \_\_\_\_\_
  - d. Horse Power \_\_\_\_\_ HP
  - e. Operating Speed \_\_\_\_\_ rpm

10. Evaporator(s)
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Number of Rows \_\_\_\_\_
  - d. No. of Fins/in. \_\_\_\_\_
  - e. Outer Diameter of Tube \_\_\_\_\_ in.
  - f. Fin Thickness \_\_\_\_\_ in.
  - g. Number of Evaporator \_\_\_\_\_
11. Expansion Valve
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
12. Filter-Drier
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
13. Heater Cores
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Capacity \_\_\_\_\_ BTU
  - d. Number of Rows \_\_\_\_\_
  - e. Number of Fins/in. \_\_\_\_\_
  - f. Outer Diameter of Tube \_\_\_\_\_ in.
  - g. Fin Thickness \_\_\_\_\_ in.
  - h. Number of Heater Cores \_\_\_\_\_
14. Floor Heater Blowers
- a. Heater Blower Motors
    - 1) Manufacturer \_\_\_\_\_
    - 2) Model Number \_\_\_\_\_
    - 3) Horsepower \_\_\_\_\_ HP
    - 4) Speed(s) \_\_\_\_\_ rpm
  - b. Heater Blower Wheel
    - 1) Manufacturer \_\_\_\_\_
    - 2) Model Number \_\_\_\_\_
    - 3) Capacity \_\_\_\_\_ cfm
  - c. Cores
    - 1) Manufacturer \_\_\_\_\_
    - 2) Model Number \_\_\_\_\_
    - 3) Capacity \_\_\_\_\_ BTU
    - 4) Number of Rows \_\_\_\_\_
    - 5) Number of Fins/in. \_\_\_\_\_ Fins
    - 6) Outer Diameter of Tube \_\_\_\_\_ in.
    - 7) Fin Thickness \_\_\_\_\_ in.
    - 8) Number of Heater Cores \_\_\_\_\_
15. Controls
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Type \_\_\_\_\_
16. Driver's Heat
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Capacity \_\_\_\_\_ BTU
17. Ventilation System
- a. Type \_\_\_\_\_
18. Coolant Heater
- a. Make \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Capacity(BTU) \_\_\_\_\_

**V. INTERIOR LIGHTING**

- Dinex with Nichia or Philips LED's
- Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Type \_\_\_\_\_
- 3. Number of Fixtures \_\_\_\_\_
- 4. Size of Fixtures \_\_\_\_\_
- 5. Power Pack \_\_\_\_\_

**W. DOORS**

- Vapor Bus International Ameriview
- Or equal as listed below:

- 1. Front
  - a. Manufacturer of Operating Equipment \_\_\_\_\_
  - b. Type of Door \_\_\_\_\_
  - c. Type of Operating Equipment \_\_\_\_\_
- 2. Rear
  - a. Manufacturer of Operating Equipment \_\_\_\_\_
  - b. Type door \_\_\_\_\_
  - c. Type of Operating Equipment \_\_\_\_\_

**X. PASSENGER WINDOWS**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_
- 4. Number: (Side) \_\_\_\_\_
- (Rear) \_\_\_\_\_
- 5. Sizes: \_\_\_\_\_
- 6. Glazing:
  - a. Type \_\_\_\_\_
  - b. Thickness \_\_\_\_\_
  - c. Color of Tint \_\_\_\_\_
  - d. Light Transmission \_\_\_\_\_

**Y. MIRRORS**

	<u>Size</u>	<u>Type</u>	<u>Manufacturer</u>	<u>Mfg. Part #</u>	<u>Model No.</u>
1. Right Side Exterior	_____	_____	_____	_____	_____
2. Left Side Exterior	_____	_____	_____	_____	_____
3. Left Side Exterior	_____	_____	_____	_____	_____
4. Center Rearview	_____	_____	_____	_____	_____
5. Front Entrance Area	_____	_____	_____	_____	_____
6. Upper-Right Hand Corner	_____	_____	_____	_____	_____
7. Rear Exit Area	_____	_____	_____	_____	_____

**Z. SEATS**

- 1. 30', 35' & 40' Bus Passenger Front Section Seats
  - American Seating Model 6466
  - Or equal as listed below:
    - a. Manufacturer \_\_\_\_\_
    - b. Model Number \_\_\_\_\_
- 2. 30', 35' & 40' Bus Passenger Rear Section Seats
  - American Seating Model 6468
  - Or equal as listed below:
    - a. Manufacturer \_\_\_\_\_
    - b. Model Number \_\_\_\_\_

3. Bus Operator Seat  
 Recaro Ergo M (3-pt) (Fluorescent Color Belt)  
 Or equal as listed below:
- a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_

**AA. PAINT**

- 1. Manufacturer \_\_\_\_\_
- 2. Type \_\_\_\_\_
- 3. Minimum Total Paint Thickness \_\_\_\_\_

**BB. WHEELCHAIR RAMP/LIFT EQUIPMENT**

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Type \_\_\_\_\_
- 4. Capacity \_\_\_\_\_ lb.
- 5. Dimensions
  - a. Width of Platform \_\_\_\_\_ in.
  - b. Length of Platform \_\_\_\_\_ in.
- 6. System Fluid Capacity \_\_\_\_\_ qt.
- 7. Type Fluid Used \_\_\_\_\_
- 8. Operating Hydraulic Pressure \_\_\_\_\_
- 9. Hydraulic Cylinders \_\_\_\_\_ psi
  - a. Size \_\_\_\_\_
  - b. Number \_\_\_\_\_

**CC. WHEELCHAIR SECUREMENT EQUIPMENT**

- American Seating ARM & Dual Auto-Lok System  
 Or equal as listed below:
- 1. Manufacturer \_\_\_\_\_
  - 2. Model Number \_\_\_\_\_

**DD. DESTINATION SIGNS**

- Twin Vision all LED  
 Or equal: \_\_\_\_\_
- 1. Type \_\_\_\_\_
  - 2. Character Length
    - a. Front Destination \_\_\_\_\_ in.
    - b. Front Run Number \_\_\_\_\_ in.
    - c. Side Destination \_\_\_\_\_ in.
    - d. Rear Route \_\_\_\_\_ in.
  - 3. Character Height
    - a. Front Destination \_\_\_\_\_ in.
    - b. Front Run Number \_\_\_\_\_ in.
    - c. Side Destination \_\_\_\_\_ in.
    - d. Rear Route \_\_\_\_\_ in.
  - 4. Number of Characters
    - a. Front Destination \_\_\_\_\_ in.
    - b. Front Run Number \_\_\_\_\_ in.
    - c. Side Destination \_\_\_\_\_ in.
    - d. Rear Route \_\_\_\_\_ in.
  - 5. Message Width
    - a. Front Destination \_\_\_\_\_ in.
    - b. Front Run Number \_\_\_\_\_ in.
    - c. Side Destination \_\_\_\_\_ in.
    - d. Rear Route \_\_\_\_\_ in.



**EE. ELECTRICAL**

- 1. Multiplex System
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
- 2. Batteries
  - a. Manufacturer \_\_\_\_\_
  - b. Model Number \_\_\_\_\_
  - c. Type \_\_\_\_\_

**FF. P.A. SYSTEM (If Required)**

- Clever Devices Speakeasy II Microphone with Minneapolis Speakers model EN5WI-6WB
- Or equal as listed below:

	<u>Manufacturer</u>	<u>Model No.</u>
1. Amplifier	_____	_____
2. Microphone	_____	_____
3. Int. Speakers	_____	_____ (number ____)
4. Ext. Speaker	_____	_____ (number ____)

**GG. VIDEO SECURITY SYSTEM**

- Seon Explorer DX
- Or equal as listed below:
  - 1. Manufacturer \_\_\_\_\_
  - 2. Model Number \_\_\_\_\_
  - 3. Description \_\_\_\_\_

**HH. BICYCLE RACK**

- Sportworks DL2 S/S with Ten Second Bracket
- Or equal as listed below:
  - 1. Manufacturer \_\_\_\_\_
  - 2. Model Number \_\_\_\_\_

**II. ENGINE FIRE SUPPRESSION SYSTEM**

- Amerex ABC Model V(H)30
- Or equal as listed below:
  - 1. Manufacturer \_\_\_\_\_
  - 2. Model Number \_\_\_\_\_
  - 3. Description \_\_\_\_\_

**JJ. TRANSMISSION FLUID**

- Castro Transynd synthetic
- Or equal as listed below:
  - 1. Manufacturer \_\_\_\_\_
  - 2. Brand Name \_\_\_\_\_
  - 3. Description \_\_\_\_\_

**KK. ENGINE BYPASS CENTRIFUGAL NON-DISPOSABLE FILTER (If Required)**

- Spinner II Model 976
- Or equal as listed below:
  - 1. Manufacturer \_\_\_\_\_
  - 2. Model Number \_\_\_\_\_
  - 3. Description \_\_\_\_\_

**LL. FUEL FILLER**

Emco Wheaton

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Description \_\_\_\_\_

**MM. AUXILIARY BUS AIR SYSTEM CONNECTION**

Lincoln Air Quick Disconnect #11659

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Description \_\_\_\_\_

**NN. BUS SUBFLOOR**

Spaceage Synthetics Thermo-Lite Composite

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Brand \_\_\_\_\_
- 3. Description \_\_\_\_\_

**OO. INTERMEDIATE PLATFORM RIBBED YELLOW FLOOR COVERING**

Hypalon

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Brand \_\_\_\_\_
- 3. Description \_\_\_\_\_

**PP. EXTERNAL REFLECTIVE GRAPHICS STRIPING**

3M Cast Vinyl

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Brand \_\_\_\_\_
- 3. Description \_\_\_\_\_

**QQ. INTERNAL SIDE TRIM PANELS**

Arborite Vogue P-925-S

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Description \_\_\_\_\_

**RR. BUS FLOORING**

Gerflor Apollo NT Self-adhesive

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Description \_\_\_\_\_

**SS. PASSENGER SEAT FABRIC**

Holdsworth 5621/6094/3267

Or equal as listed below:

- 1. Manufacturer \_\_\_\_\_
- 2. Model Number \_\_\_\_\_
- 3. Description \_\_\_\_\_

**TT. PASSENGER NOTICE SIGN FRAMES**

Transit Information Products MC TAB HOR

or equal as listed below:

1. Manufacturer \_\_\_\_\_
2. Model Number \_\_\_\_\_
3. Description \_\_\_\_\_

**UU. SCHEDULE HOLDER**

Transit Information Products OBIC-WW8-P

Or equal as listed below:

1. Manufacturer \_\_\_\_\_
2. Model Number \_\_\_\_\_
3. Description \_\_\_\_\_

**VV. SUPERCAPACITOR ENGINE START AID**

KAPower KBI EC501.2

Or equal as listed below:

1. Manufacturer \_\_\_\_\_
2. Model Number \_\_\_\_\_
3. Description \_\_\_\_\_

**WW. RADIO HANDSET AND CRADLE**

Audiosears Corp. 1001A00AEMJLUC-QHC

Or equal as listed below:

1. Manufacturer \_\_\_\_\_
2. Model Number \_\_\_\_\_
3. Description \_\_\_\_\_

**XX. COVERT EMERGENCY ALARM BUTTON**

Square D #9001KR2U Push Button

Or equal as listed below:

1. Manufacturer \_\_\_\_\_
2. Model Number \_\_\_\_\_
3. Description \_\_\_\_\_

**YY. ITS SYSTEM**

Trapeze TransitMaster

Or equal as listed below:

1. Manufacturer \_\_\_\_\_
2. Model Number \_\_\_\_\_
3. Description \_\_\_\_\_



**AAA. PROPOSER SERVICE AND PARTS SUPPORT**

**1. Location of nearest Technical Service Representative to CTDOT**

Name \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Proposer to describe technical services readily available from said representative:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**2. Location of nearest parts distribution center to CTDOT**

Name \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Proposer to describe the extent of parts available at said center:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**3. Policy for delivery of parts and components to be purchased for service and maintenance**

Regular method of Shipment \_\_\_\_\_

Cost to CTDOT \_\_\_\_\_

**EXHIBIT A.2**

FEDERAL TRANSIT ADMINISTRATION (FTA)  
FEDERALLY REQUIRED CLAUSES

**FEDERAL TRANSIT ADMINISTRATION (FTA)**  
**Federally Required Contract Clauses**

1. ACCESS TO RECORDS AND REPORTS
2. RESERVED
3. BUS TESTING
4. BUY AMERICA REQUIREMENTS – **Return Certification with Proposal**
5. CARGO PREFERENCE REQUIREMENTS
6. RESERVED
7. CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT
8. CIVIL RIGHTS LAWS AND REGULATIONS
9. DISADVANTAGED BUSINESS ENTERPRISE (DBE) – **Return Certifications with Proposal**
10. RESERVED
11. ENERGY CONSERVATION
12. FLY AMERICA
13. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION
14. LOBBYING RESTRICTIONS – **Return Certification with Proposal**
15. NO GOVERNMENT OBLIGATION TO THIRD PARTIES
16. RESERVED
17. PRE-AWARD AND POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES – **Return Certification with Proposal**
18. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS
19. RESERVED
20. RESERVED
21. RESERVED
22. RESERVED
23. RESERVED
24. RESERVED
25. TERMINATION
26. VIOLATION AND BREACH OF CONTRACT

**In addition to the certifications noted above, complete and return the following with your Proposal:**

- Certification to Federal Government Required Clauses (FTA)
- Certification of Compliance with Federal Motor Vehicle Safety Standards (FMVSS)
- Compliance with the Americans with Disabilities Act

## 1. ACCESS TO RECORDS AND REPORTS

49 U.S.C. § 5325(g)

2 C.F.R. § 200.333

49 C.F.R. part 633

- a. Record Retention. The Contractor will retain, and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, data, documents, reports, statistics, sub-agreements, leases, subcontracts, arrangements, other third party agreements of any type, and supporting materials related to those records.
- b. Retention Period. The Contractor agrees to comply with the record retention requirements in accordance with 2 C.F.R. § 200.333. The Contractor shall maintain all books, records, accounts and reports required under this Contract for a period of at not less than three (3) 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 records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.
- c. Access to Records. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to performance of this contract as reasonably may be required.
- d. Access to the Sites of Performance. The Contractor agrees to permit FTA and its contractors access to the sites of performance under this contract as reasonably may be required.



2. [ RESERVED ]

### **3. BUS TESTING**

**49 U.S.C. § 5318(e)**

**49 C.F.R. part 665**

The Contractor [Manufacturer] agrees to comply with the Bus Testing requirements under 49 5318(e) and FTA's implementing regulation at 49 C.F.R. part 665 to ensure that the requisite testing is performed for all new bus models or any bus model with a major change in configuration or components, and that the bus model has achieved a passing score. Upon completion of the testing, the contractor shall obtain a copy of the bus testing reports from the operator of the testing facility and make that report(s) publicly available prior to final acceptance of the first vehicle by the recipient.

#### **4. BUY AMERICA REQUIREMENTS**

**49 U.S.C. 5323(j)**

**49 C.F.R. part 661**

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 all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11.

The Contractor must submit the appropriate Buy America certification below with its Proposal. Proposals that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

***In accordance with 49 C.F.R. § 661.12, for the procurement of rolling stock (including train control, communication, and traction power equipment) use the following certifications:***

*Certificate of Compliance with Buy America Rolling Stock Requirements*

The Contractor hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j), and the applicable regulations of 49 C.F.R. § 661.11.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Company: \_\_\_\_\_

Title: \_\_\_\_\_

*Certificate of Non-Compliance with Buy America Rolling Stock Requirements*

The Contractor hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but may qualify for an exception to the requirement consistent with 49 U.S.C. 5323(j)(2)(C), and the applicable regulations in 49 C.F.R. § 661.7.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Company: \_\_\_\_\_

Title: \_\_\_\_\_

## 5. CARGO PREFERENCE REQUIREMENTS

46 U.S.C. § 55305

46 C.F.R. part 381

### Cargo Preference - Use of United States-Flag Vessels

The Contractor agrees:

- a. to use privately owned United States-Flag commercial vessels to ship at least fifty (50) percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;
- b. to furnish within twenty (20) working days following the date of loading for shipments originating within the United States or within thirty (30) working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the Contractor in the case of a subcontractor's bill-of-lading.); and
- 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.

6. [ RESERVED ]

**7. CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

**42 U.S.C. §§ 7401 – 7671q**

**33 U.S.C. §§ 1251-1387**

**2 C.F.R. part 200, Appendix II (G)**

The Contractor agrees:

- 1) It will not use any violating facilities;
- 2) It will report the use of facilities placed on or likely to be placed on the U.S. EPA "List of Violating Facilities;"
- 3) It will report violations of use of prohibited facilities to FTA; and
- 4) It will comply with the inspection and other requirements of the Clean Air Act, as amended, (42 U.S.C. §§ 7401 – 7671q); and the Federal Water Pollution Control Act as amended, (33 U.S.C. §§ 1251-1387).

## 8. CIVIL RIGHTS LAWS AND REGULATIONS

### Civil Rights and Equal Opportunity

CTDOT is an Equal Opportunity Employer. As such, CTDOT agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, CTDOT agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications.

Under this Agreement, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof.

1. **Nondiscrimination.** In accordance with 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, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
2. **Race, Color, Religion, National Origin, Sex.** In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e *et seq.*, 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. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. 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, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, 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.
3. **Age.** In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621- 634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 *et seq.*, U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, 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.



4. **Disabilities.** In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 *et seq.*, the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 *et seq.*, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

**9. DISADVANTAGED BUSINESS ENTERPRISE (DBE)**  
**49 C.F.R. part 26**

The Contractor, subrecipient 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 C.F.R. 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 such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the Contractor from future bidding as non-responsible. 49 C.F.R. § 26.13(b).

**Overview**

It is the policy of CTDOT and the United States Department of Transportation ("DOT") that Disadvantaged Business Enterprises ("DBE's"), as defined herein and in the Federal regulations published at 49 C.F.R. part 26, shall have an equal opportunity to participate in DOT-assisted contracts. It is also the policy of CTDOT to:

1. Ensure nondiscrimination in the award and administration of DOT-assisted contracts;
2. Create a level playing field on which DBE's can compete fairly for DOT-assisted contracts;
3. Ensure that the DBE program is narrowly tailored in accordance with applicable law;
4. Ensure that only firms that fully meet 49 C.F.R. part 26 eligibility standards are permitted to participate as DBE's;
5. Help remove barriers to the participation of DBEs in DOT assisted contracts;
6. To promote the use of DBEs in all types of federally assisted contracts and procurement activities; and
7. Assist in the development of firms that can compete successfully in the marketplace outside the DBE program.

This Contract is subject to 49 C.F.R. part 26. Therefore, the Contractor must satisfy the requirements for DBE participation as set forth herein. These requirements are in addition to all other equal opportunity employment requirements of this Contract. CTDOT shall make all determinations with regard to whether or not a Contractor is in compliance with the requirements stated herein. In assessing compliance, CTDOT may consider during its review of the Contractor's submission package,

the Contractor's documented history of non-compliance with DBE requirements on previous contracts with CTDOT.

### **Contract Assurance**

The Contractor, subrecipient 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 C.F.R. 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 such other remedy as CTDOT deems appropriate.

### **DBE Participation**

For the purpose of this Contract, CTDOT will accept only DBE's who are:

1. Certified, at the time of bid opening or proposal evaluation, by CTDOT; or
2. An out-of-state firm who has been certified by either a local government, state government or Federal government entity authorized to certify DBE status or an agency whose DBE certification process has received FTA approval; or
3. Certified by another agency approved by CTDOT.

### **DBE Participation Goal**

A separate contract goal has not been established for this procurement.

### **Proposed Submission**

Each Contractor, as part of its submission, shall supply the following information:

1. A completed **DBE Utilization Form** (see below) that indicates the percentage and dollar value of the total bid/contract amount to be supplied by Disadvantaged Business Enterprises under this Contract.
2. A list of those qualified DBE's with whom the Contractor intends to contract for the performance of portions of the work under the Contract, the agreed price to be paid to each DBE for work, the Contract items or parts to be performed by each DBE, a proposed timetable for the performance or delivery of the Contract item, and other information as required by the **DBE Participation Schedule** (see below). No work shall be included in the Schedule that the Contractor has reason to believe the listed DBE will subcontract, at any tier, to other than another DBE. If awarded the Contract, the Contractor may not deviate from the DBE Participation Schedule submitted in response to the bid. Any subsequent changes and/or substitutions of DBE firms will require review and written approval by CTDOT.

3. An original **DBE Letter of Intent** (see below) from each DBE listed in the **DBE Participation Schedule**.
4. An original **DBE Affidavit** (see below) from each DBE stating that there has not been any change in its status since the date of its last certification.

### **Good Faith Efforts**

CTDOT will consider the Contractor's documented good faith efforts to meet the goal in determining responsiveness. The types of actions that CTDOT will consider as part of the Contractor's good faith efforts include, but are not limited to, the following:

1. Documented communication with CTDOT's DBE Coordinator (questions of IFB or RFP requirements, subcontracting opportunities, appropriate certification, will be addressed in a timely fashion);
2. Pre-bid meeting attendance. At the pre-bid meeting, CTDOT generally informs potential Contractor of DBE subcontracting opportunities;
3. The Contractor's own solicitations to obtain DBE involvement in general circulation media, trade association publication, minority-focus media and other reasonable and available means within sufficient time to allow DBEs to respond to the solicitation;
4. Written notification to DBE's encouraging participation in the proposed Contract; and
5. Efforts made to identify specific portions of the work that might be performed by DBE's.

The Contractor shall provide the following details, at a minimum, of the specific efforts it made to negotiate in good faith with DBE's for elements of the Contract:

1. The names, addresses, and telephone numbers of DBE's that were contacted;
2. A description of the information provided to targeted DBE's regarding the specifications and bid proposals for portions of the work;
3. Efforts made to assist DBE's contacted in obtaining bonding or insurance required by the Contractor or CTDOT.

Further, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted when a non-DBE subcontractor was selected over a DBE for work on the Contract. 49 C.F.R. § 26.53(b) (2) (VI). In determining whether a Contractor has made good faith efforts, the Authority may take into account the performance of other Contractors in meeting the Contract goals. For example, if the apparent successful Contractor failed to meet the goal, but meets

or exceeds the average DBE participation obtained by other Contractors, the Authority may view this as evidence of the Contractor having made good faith efforts.

### **Administrative Reconsideration**

Within five (5) business days of being informed by CTDOT that it is not responsive or responsible because it has not documented sufficient good faith efforts, the Contractor may request administrative reconsideration. The Contractor should make this request in writing to CTDOT's representative. The representative will forward the Contractor's request to a reconsideration official who will not have played any role in the original determination that the Contractor did not document sufficient good faith efforts.

As part of this reconsideration, the Contractor will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The Contractor will have the opportunity to meet in person with the assigned reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. CTDOT will send the Contractor a written decision on its reconsideration, explaining the basis for finding that the Contractor did or did not meet the goal or make adequate good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

### **Termination of DBE Subcontractor**

The Contractor shall not terminate the DBE subcontractor(s) listed in the **DBE Participation Schedule** (see below) without CTDOT's prior written consent. CTDOT may provide such written consent only if the Contractor has good cause to terminate the DBE firm. Before transmitting a request to terminate, the Contractor shall give notice in writing to the DBE subcontractor of its intent to terminate and the reason for the request. The Contractor shall give the DBE five (5) days to respond to the notice and advise of the reasons why it objects to the proposed termination. When a DBE subcontractor is terminated or fails to complete its work on the Contract for any reason, the Contractor shall make good faith efforts to find another DBE subcontractor to substitute for the original DBE and immediately notify CTDOT in writing of its efforts to replace the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the Contract as the DBE that was terminated, to the extent needed to meet the Contract goal established for this procurement. Failure to comply with these requirements will be in accordance with Section 8 below (Sanctions for Violations).

### **Continued Compliance**

CTDOT shall monitor the Contractor's DBE compliance during the life of the Contract. In the event this procurement exceeds ninety (90) days, **it will be the responsibility of the Contractor**

**to submit quarterly written reports to CTDOT that** summarize the total DBE value for this Contract. These reports shall provide the following details:

- DBE utilization established for the Contract;
- Total value of expenditures with DBE firms for the quarter;
- The value of expenditures with each DBE firm for the quarter by race and gender;
- Total value of expenditures with DBE firms from inception of the Contract; and
  - The value of expenditures with each DBE firm from the inception of the Contract by race and gender.

Reports and other correspondence must be submitted to the DBE Coordinator with copies provided to CTDOT. Reports shall continue to be submitted quarterly until final payment is issued or until DBE participation is completed.

The successful Contractor shall permit:

- CTDOT to have access to necessary records to examine information as CTDOT deems appropriate for the purpose of investigating and determining compliance with this provision, including, but not limited to, records of expenditures, invoices, and contract between the successful Contractor and other DBE parties entered into during the life of the Contract.
- The authorized representative(s) of CTDOT, the U.S. Department of Transportation, the Comptroller General of the United States, to inspect and audit all data and record of the Contractor relating to its performance under the Disadvantaged Business Enterprise Participation provision of this Contract.
- All data/record(s) pertaining to DBE shall be maintained as stated in Section 1.

#### **Sanctions for Violations**

If at any time CTDOT has reason to believe that the Contractor is in violation of its obligations under this Agreement or has otherwise failed to comply with terms of this Section, CTDOT may, in addition to pursuing any other available legal remedy, commence proceedings, which may include but are not limited to, the following:

- Suspension of any payment or part due the Contractor until such time as the issues concerning the Contractor's compliance are resolved; and
- Termination or cancellation of the Contract, in whole or in part, unless the successful Contractor is able to demonstrate within a reasonable time that it is in compliance with the DBE terms stated herein.

**DBE UTILIZATION FORM**

The undersigned Contractor has satisfied the requirements of the solicitation in the following manner (please check the appropriate space):

\_\_\_\_\_ The Contractor is committed to a minimum of \_\_\_\_\_% DBE utilization on this contract.

\_\_\_\_\_ The Contractor (if unable to meet the DBE goal of \_\_\_%) is committed to a minimum of \_\_\_\_\_% DBE utilization on this contract and submits documentation demonstrating good faith efforts.

**DBE PARTICIPATION SCHEDULE**

The Contractor shall complete the following information for all DBE's participating in the Contract that comprises the DBE Utilization percent stated in the DBE Utilization Form. The Contractor shall also furnish the name and telephone number of the appropriate contact person should the Authority have any questions in relation to the information furnished herein.

**DBE IDENTIFICATION AND INFORMATION FORM**

Name and Address	Contact Name and Telephone Number	Participation Percent (Of Total Contract Value)	Description Of Work To Be Performed	Race and Gender of Firm

10. [ RESERVED ]



**11. ENERGY CONSERVATION**  
**42 U.S.C. 6321 *et seq.***  
**49 C.F.R. part 622, subpart C**

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.

**12. FLY AMERICA**  
**49 U.S.C. § 40118**  
**41 C.F.R. part 301-10**  
**48 C.F.R. part 47.4**

a) *Definitions.* As used in this clause--

“International air transportation” means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.

“United States” means the 50 States, the District of Columbia, and outlying areas.

“U.S.-flag air carrier” means an air carrier holding a certificate under 49 U.S.C. Chapter 411.

- b) When Federal funds are used to fund travel, Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) (Fly America Act) requires contractors, recipients, and others use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.
- c) If available, the Contractor, in performing work under this contract, shall use U.S.-flag carriers for international air transportation of personnel (and their personal effects) or property.
- d) In the event that the Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, the Contractor shall include a statement on vouchers involving such transportation essentially as follows:

**Statement of Unavailability of U.S.-Flag Air Carriers**

International air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons. See FAR § 47.403. *[State reasons]:*

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e) The Contractor shall include the substance of this clause, including this paragraph (e), in each subcontract or purchase under this contract that may involve international air transportation.

### **13. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION**

**2 C.F.R. part 180**

**2 C.F.R part 1200**

**2 C.F.R. § 200.213**

**2 C.F.R. part 200 Appendix II (I) Executive Order 12549**

**Executive Order 12689**

#### **Debarment, Suspension, Ineligibility and Voluntary Exclusion**

The Contractor shall comply and facilitate compliance with U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of \$25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

- a) Debarred from participation in any federally assisted Award;
- b) Suspended from participation in any federally assisted Award;
- c) Proposed for debarment from participation in any federally assisted Award;
- d) Declared ineligible to participate in any federally assisted Award;
- e) Voluntarily excluded from participation in any federally assisted Award; or
- f) Disqualified from participation in any federally assisted Award.

By signing and submitting its bid or proposal, the Contractor certifies as follows:

The certification in this clause is a material representation of fact relied upon by CTDOT. If it is later determined by CTDOT that the Contractor knowingly rendered an erroneous certification, in addition to remedies available to CTDOT, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The Contractor agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

**14. LOBBYING RESTRICTIONS**

**31 U.S.C. § 1352**

**2 C.F.R. § 200.450**

**2 C.F.R. part 200 appendix II (J) 49 C.F.R. part 20**

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for 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 subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, 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.

\_\_\_\_\_ Signature of Contractor's Authorized Official

\_\_\_\_\_ Name and Title of Contractor's Authorized Official

\_\_\_\_\_ Date

## **15. NO GOVERNMENT OBLIGATION TO THIRD PARTIES**

CTDOT and the 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 CTDOT, Contractor or any other party (whether or not a party to that Contract) pertaining to any matter resulting from the underlying Contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by the FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

16. [ RESERVED ]

**17. PRE-AWARD AND POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES**

**49 U.S.C. 5323(m)**

**49 C.F.R. part 663**

The Contractor agrees to comply with 49 U.S.C. § 5323(m) and FTA's implementing regulation at 49 C.F.R. part 663. The Contractor shall comply with the Buy America certification(s) submitted with its proposal. The Contractor agrees to participate and cooperate in any pre-award and post-delivery audits performed pursuant to 49 C.F.R. part 663 and related FTA guidance.



**18. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS**

**49 U.S.C. § 5323(l) (1)**

**31 U.S.C. §§ 3801-3812**

**18 U.S.C. § 1001**

**49 C.F.R. part 31**

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.

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. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

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.

19. [ RESERVED ]

20. [RESERVED]

21. [ RESERVED ]

22. [ RESERVED ]

23. [ RESERVED ]

24. [ RESERVED ]

**25. TERMINATION**

**2 C.F.R. § 200.339**

**2 C.F.R. part 200, Appendix II (B)**

SEE CONTRACT DOCUMENT (SP-50), SECTION 10. (TERMINATION)



**26. VIOLATION AND BREACH OF CONTRACT**

**2 C.F.R. § 200.326**

**2 C.F.R. part 200, Appendix II (A)**

SEE CONTRACT DOCUMENT (SP-50), SECTION 12. (BREACH)

**EXHIBIT B**

**PRICE SCHEDULE**

**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUSINESS SERVICES & INVENTORY MANAGEMENT**

CTDOT Purchasing Contact:  
Mary Matuszak  
Fiscal Admin. Supervisor

Telephone Number:  
(860) 594-2342  
e-mail: mary.matuszak@ct.gov

<p><b><u>EXHIBIT B</u></b></p> <p><b>PRICE SCHEDULE</b> For RFP No. 19DOT7000</p>	PROPOSER NAME:
	SSN OR FEIN #

Payment terms are net 45 days. Any deviation may result in RFP rejection.  
RFP prices shall include all transportation charges FOB state agency.

	DESCRIPTION OF COMMODITY AND/OR SERVICES	UNIT OF MEASURE	UNIT PRICE
	<b>MAKE AND MODEL</b>		
	<b>DATE OF DELIVERY After Receipt of Order (ARO)</b>		
	<b><u>OVERNIGHT CHARGING</u></b>		
1.	35' Low Floor: _____ days ARO	each	\$ _____
2.	40' Low Floor: _____ days ARO	each	\$ _____
	<b><u>OPPORTUNITY CHARGING</u></b>		
3.	35' Low Floor: _____ days ARO	each	\$ _____
4.	40' Low Floor: _____ days ARO	each	\$ _____
	<b><u>OVERNIGHT CHARGING WITH BATTERY REPOWER OPTION AFTER YEAR 6</u></b>		
5.	35' Low Floor: _____ days ARO	each	\$ _____
6.	40' Low Floor: _____ days ARO	each	\$ _____
	<b><u>OPPORTUNITY CHARGING W/ BATTERY REPOWER OPTION AFTER YEAR 6</u></b>		
7.	35' Low Floor: _____ days ARO	each	\$ _____
8.	40' Low Floor: _____ days ARO	each	\$ _____
	<b>EXPEDITED PAYMENT DISCOUNT: DISCOUNT SHALL BE LISTED BELOW AND MUST BE A MINIMUM OF TEN (10) DAYS. IF NONE, SO STATE: _____</b>		
	Discount Percentage: _____%		
	Discount Maximum Time Period: _____ Days		

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
PURCHASING & MATERIALS MANAGEMENT

PROPOSER NAME:

**EXHIBIT B**

**PRICE SCHEDULE**

For RFP No. 19DOT7000

SSN OR FEIN #

ComDOT Purchasing Contact:  
Mary Matuszak  
Fiscal Admin. Supervisor

Telephone Number:  
(860) 594-2342  
e-mail: mary.matuszak@ct.gov

**IMPORTANT!**  
RETURN ORIGINAL AND THREE COPIES

Payment terms are net 45 days. Any deviation may result in RFP rejection.  
RFP prices shall include all transportation charges FOB state agency.

**OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING**

Item #	(Quantity) Description of Item	35' Bus Unit Price	40' Bus Unit Price
1	(1 to 10) Propulsion Motor	\$	\$
2	(1 to 10) Propulsion System Transmission / Gearbox Assembly	\$	\$
3	(1 to 5) Rear Axle Assembly	\$	\$
4	(1 to 5) Differential Assembly	\$	\$
5	(1 to 5) Driver's Seat	\$	\$
6	(1 to 5) Cooling System Radiator Assembly	\$	\$
7	(1 to 5) Diesel Auxiliary Heater System	\$	\$
8	(1 to 3) Electric Air Compressor	\$	\$
9	(1 to 3) Transformer -- Step Down	\$	\$
10	(1 to 3) Electronic Destination Sign	\$	\$
11	(1 to 3) Multiplex System	\$	\$
12	(1 to 3) Complete Video Recording System	\$	\$
13	(1 to 1) Electric Cooling Fans	\$	\$
14	(1 to 5) ESS / Energy Storage System / Battery Assembly	\$	\$

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
PURCHASING & MATERIALS MANAGEMENT

**EXHIBIT B**  
**PRICE SCHEDULE**  
For RFP No. 19DOT7000

PROPOSER NAME:

SSN OR FEIN #

ConnDOT Purchasing Contact:  
Mary Matuszak  
Fiscal Admin. Supervisor

Telephone Number:  
(860) 594-2342  
e-mail: mary.matuszak@ct.gov

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Page 3 of 4

**OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING**

Item #	(Quantity) Description of Item	35' Bus Unit Price	40' Bus Unit Price
15	(1 to 10) Air Conditioner Compressor	\$	\$
16	(1 to 10) Air Conditioner Evaporator	\$	\$
17	(1 to 1) Air Conditioner Evaporator Fan Motor	\$	\$
18	(1 to 10) Air Conditioner Condenser	\$	\$
19	(1 to 1) Air Conditioner Condenser Fan Motor	\$	\$
20	(1 to 5) Electric / Hydraulic Steering Box	\$	\$
21	(1 to 10) Propulsion System Management Module	\$	\$
22	Extended Propulsion System Warranty (to five years)	\$	\$
23	Extended Battery Assembly Warranty (to five years)	\$	\$
24	Automatic Tire Chain System	\$	\$
25	Electric power steering	\$	\$
26	Glad-hand coupler in the front of the vehicle	\$	\$
27	Formed plastic seats	\$	\$
28	Powered USB 2.0 ports at all passenger seating	\$	\$

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
PURCHASING & MATERIALS MANAGEMENT

PROPOSER NAME:

**EXHIBIT B**

**PRICE SCHEDULE**  
For RFP No. 19DOT7000

SSN OR FEIN #

ConnDOT Purchasing Contact:  
Mary Matuszak  
Fiscal Admin. Supervisor

Telephone Number:  
(860) 594-2342  
e-mail: mary.matuszak@ct.gov

**IMPORTANT!**  
**RETURN ORIGINAL AND THREE COPIES**

Payment terms are net 45 days. Any deviation may result in RFP rejection.  
RFP prices shall include all transportation charges FOB state agency.

**OPTIONAL BUS AND CHARGER SYSTEM COMPONENT PRICING**

Item #	(Quantity) Description of Item	35' Bus Unit Price	40' Bus Unit Price
29	Wheel well chain guards	\$	\$
30	Overhead 450kW+ Opportunity Charger System	\$	\$
31	Diesel Auxiliary Heater System	\$	\$
32	Overnight 120kW Charger with Software & Communications	\$	\$
33	Overnight Charger Mgt. Software License (per unit per year)	\$	\$
34	Operator protective safety barrier with installation	\$	\$
35	Present-Value Cost - Full Battery Replacement @ Year 6	\$	\$
36	Passenger-facing WiFi System with Bandwidth Throttling	\$	\$
37	Onboard Infotainment Monitor System	\$	\$
38	Additional LED 3rd Rear Brake Lamp indicating "STOP"	\$	\$
39	Street side sign displaying Bus or Charging Information	\$	\$
40	Independent Should Belt & Lap Belt Combination	\$	\$
41	Hands-free Microphone System with Foot Switch Activation	\$	\$

**EXHIBIT C**

SEEC FORM 11



## Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(G)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (*italicized words are defined on the reverse side of this page.*

### CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor or principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

### DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

### PENALTIES FOR VIOLATIONS

Contributions of solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

**Civil Penalties** – Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

**Criminal penalties** – Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

### CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, [www.ct.gov/seec](http://www.ct.gov/seec). Click on the link to "Lobbyist/Contractor Limitations."



**EXHIBIT D**

SAMPLE CONTRACT DOCUMENT  
DOT-50

# **CONTRACT**

Between

**THE STATE OF CONNECTICUT**

Acting by its

**DEPARTMENT OF TRANSPORTATION**

**AND**

---

35' and 40' Low Floor, Heavy-Duty Battery Electric Powered Transit Buses

---

Contract Award Date \_\_\_\_\_, 2019

## Contract #19DOT7000

Contract Document

DOT-50 Rev. 8/19

### Contract Table of Contents

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  2. Contracting Vehicle
  3. Term of Contract
  4. Description of Goods and Services
  5. Price Schedule, Payment Terms and Billing
  6. Rejected Items; Abandonment
  7. Order and Delivery
  8. Contract Amendments
  9. Assignment
  10. Termination
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- EXHIBIT C – SEEC Form 11**

Contract #19DOT7000

Contract Document

DOT-50 Rev. 8/19

This contract (the "Contract") is made as of the \_\_\_\_\_ day of \_\_\_\_\_, by and between, \_\_\_\_\_ (the "Contractor,") with a principal place of business at \_\_\_\_\_, acting by \_\_\_\_\_, its \_\_\_\_\_ and the State of Connecticut, Department of Transportation (the "Agency", or CTDOT), with a principal place of business at 2800 Berlin Turnpike, Newington, Connecticut, acting by Richard Andreski, its Public Transportation Bureau Chief, in accordance with Section 13b-34 of the Connecticut General Statutes.

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

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

Contract #19DOT7000

Contract Document

DOT-50 Rev. 8/19

- (g) Contractor Parties: A Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.
  - (h) Day: All calendar days other than Saturdays, Sundays and days designated as national or State of Connecticut holidays upon which banks in Connecticut are closed.
  - (i) Force Majeure: Events that materially affect the cost of the Goods or Services or the time schedule within which to Perform and are outside the control of the party asserting that such an event has occurred, including, but not limited to, labor troubles unrelated to the Contractor, failure of or inadequate permanent power, unavoidable casualties, fire not caused by the Contractor, extraordinary weather conditions, disasters, riots, acts of God, insurrection or war.
  - (j) Goods: For purposes of the Contract, all things which are movable at the time that the Contract is effective and which include, without limiting this definition, supplies, materials and equipment, as specified in the Solicitation and set forth in Exhibit A.
  - (k) Goods or Services: Goods, Services or both, as specified in the Solicitation and set forth in Exhibit A.
  - (l) Records: All working papers and such other information and materials as may have been accumulated by the Contractor in performing the Contract, including but not limited to, documents, data, plans, books, computations, drawings, specifications, notes, reports, records, estimates, summaries and correspondence, kept or stored in any form.
  - (m) Services: The performance of labor or work, as specified in the Solicitation and set forth in Exhibit A.
  - (n) Solicitation: A State request, in whatever form issued, inviting bids, proposals or quotes for Goods or Services, typified by, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes. The Solicitation and this Contract shall be governed by the statutes, regulations and procedures of the State of Connecticut, Department of Administrative Services, even if the Agency has statutes, regulations and procedures which overlap DAS's. However, to the extent that the Agency has statutes, regulations or procedures which the Agency determines in its sole discretion to be inconsistent with DAS's, the Agency's shall control over those of DAS's. The Solicitation is incorporated into and made a part of the Contract as if it had been fully set forth in it if, but only if, the Solicitation is in the form of an invitation to bid, request for information or request for quotes. A Solicitation in the form of a request for proposals is not incorporated into the Contract in its entirety, but, rather, it is incorporated into the Contract only to the extent specifically stated in Exhibit A.
  - (o) State: The State of Connecticut, including the Agency and any office, department, board, council, commission, institution or other agency of the State.
  - (p) Termination: An end to the Contract prior to the end of its term whether effected pursuant to a right which the Contract creates or for a breach.
  - (q) Title: all ownership, title, licenses, rights and interest, including, but not limited to, perpetual use, of and to the Goods or Services.
2. Contracting Vehicle. The Solicitation may involve an invitation to bid, request for proposals, request for information or request for quotes, each of which may be governed by different statutory, regulatory and administrative procedures. **ALTHOUGH THIS CONTRACT USES THE TERMS**

"SOLICITATION" AND "BID" IT'S USE OF THOSE TERMS IS INTENDED ONLY FOR PURPOSES OF CONVENIENCE AND SHALL NOT BE DEEMED TO BE A CONTROLLING STATEMENT AS TO THE TYPE OF SOLICITATION USED OR THE RESPECTIVE RIGHTS AND OBLIGATIONS OF THE PARTIES. THE IDENTIFICATION IN THE SOLICITATION OF THE PARTICULAR PROCUREMENT VEHICLE THE STATE IS USING TO SOLICIT GOODS OR SERVICES SHALL CONTROL. Therefore, if the Solicitation identifies the procurement vehicle as something other than an Invitation to Bid, the terms "Solicitation" and "Bid," as used in this Contract shall be read to mean "Request for Proposals," "Proposal" and "Proposer" or to mean such other terms as are consistent with the Solicitation in order to preserve the integrity of the statutory, regulatory and procedural distinctions among the various procurement vehicles and their corresponding principles.

3. Term of Contract; Effective Date. The Contract will be in effect for two (2) years from the date the contract is approved by the Office of the Attorney General.
4. Description of Goods or Services and Additional Terms and Conditions. The Contractor shall perform as set forth in Exhibit A, Exhibits A.1 and A.2. For purposes of this Contract, to perform and the performance in Exhibit A and Exhibits A.1 and A.2 is referred to as "Perform" and the "Performance."
5. Price Schedule, Payment Terms and Billing.
  - (a) Payment terms under this Contract are set forth in Exhibit B.
  - (b) The State shall make all payments to the Contractor through electronic funds transfer via the Automated Clearing House ("ACH") or through the State of Connecticut Purchasing Card (MasterCard) in accordance with Memorandum No. 2011-11 issued by the Office of the State Comptroller.
  - (c) Contractor shall enroll in ACH through the Office of the State Comptroller prior to sending any invoice to the State. The Contractor may obtain detailed information regarding ACH at: <http://www.osc.ct.gov/vendor/directdeposit.html>
  - (d) Contractor shall be equipped to receive orders issued by the Client Agency using the MasterCard. The Contractor shall be responsible for the credit card user-handling fee associated with MasterCard purchases. The Contractor shall charge to the MasterCard only upon acceptance of Goods delivered to the Client Agency or the rendering of Services.
  - (e) The Contractor shall capture and provide to its merchant bank, Level 3 reporting at the line item level for all orders placed by MasterCard.
  - (f) Questions regarding the state of Connecticut MasterCard Program may be directed to Ms. Kerry DiMatteo, Procurement Card Program Administrator at 860-713-5072.
  - (g) Notwithstanding any language regarding Contractor price increases herein, the Price Schedule will be adjusted to reflect any increase in the minimum wage rate that may occur during the term of this Contract as mandated by State law and in accordance with the terms of this section. Contractor shall provide documentation, in the form of certified payroll or other documentation acceptable to the State, substantiating the amount of any increase in Contractor labor costs as a result of changes to the minimum wage rate within ninety (90) days of the statutorily identified effective date of any increase in the minimum wage. Upon receipt, and verification of Contractor documentation DAS shall adjust the Price Schedule accordingly through a supplement to this Contract.
  - (h) Price Adjustments: See Exhibit A, Additional Terms and Conditions; Section 2.14 – Price Escalations/Economic Price Adjustment

6. Rejected Items; Abandonment.

- (a) The Contractor may deliver, cause to be delivered, or, in any other way, bring or cause to be brought, to any State premises or other destination, Goods, as samples or otherwise, and other supplies, materials, equipment or other tangible personal property. The State may, by written notice and in accordance with the terms and conditions of the Contract, direct the Contractor to remove any or all such Goods ("the "Rejected Goods") and any or all other supplies, materials, equipment or other tangible personal property (collectively, the "Contractor Property") from and out of State premises and any other location which the Agency or State manages, leases or controls. The Contractor shall remove the Rejected Goods and the Contractor Property in accordance with the terms and conditions of the written notice. Failure to remove the Rejected Goods or the Contractor Property in accordance with the terms and conditions of the written notice shall mean, for itself and all Contractor Parties, that:
- (1) they have voluntarily, intentionally, unconditionally, unequivocally and absolutely abandoned and left unclaimed the Rejected Goods and Contractor Property and relinquished all ownership, title, licenses, rights, possession and interest of, in and to (collectively, "Title") the Rejected Goods and Contractor Property with the specific and express intent of (A) terminating all of their Title to the Rejected Goods and Contractor Property, (B) vesting Title to the Rejected Goods and Contractor Property in the State of Connecticut and (C) not ever reclaiming Title or any future rights of any type in and to the Rejected Goods and Contractor Property;
  - (2) there is no ignorance, inadvertence or unawareness to mitigate against the intent to abandon the Rejected Goods or Contractor Property;
  - (3) they vest authority, without any further act required on their part or the Agency's part, in the Agency and the State to use or dispose of the Rejected Goods and Contractor Property, in the Agency's sole discretion, as if the Rejected Goods and Contractor Property were the Agency's or State's own property and in accordance with law, without incurring any liability or obligation to the Contractor or any other party;
  - (4) if the Agency or State incur any costs or expenses in connection with disposing of the Rejected Goods and Contractor Property, including, but not limited to, advertising, moving or storing the Rejected Goods and Contractor Property, auction and other activities, the Agency shall invoice the Contractor for all such cost and expenses and the Contractor shall reimburse the State no later than thirty (30) days after the date of invoice; and
  - (5) they do remise, release and forever discharge the Agency and all State employees, departments, commissions, boards, bureaus, agencies, instrumentalities or political subdivisions and their respective successors, heirs, executors and assigns (collectively, the "State and Its Agents") of and from all Claims which they and their respective successors or assigns, jointly or severally, ever had, now have or will have against the Agency and the State and Its Agents arising from the use or disposition of the Rejected Goods and Contractor Property.
- (b) The Contractor shall secure from each Contractor Party, as appropriate, such document or instrument as necessary or appropriate as will vest in the Contractor plenary authority to bind the Contractor Parties to the full extent necessary or appropriate to give full effect to all of the terms and conditions of this section. The Contractor shall provide, no later than fifteen (15) days after receiving a request from the Agency, such information as the Agency may require to evidence, in the Agency's sole determination, compliance with this section.

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7. Order and Delivery. The Contract shall bind the Contractor to furnish and deliver the Goods or Services in accordance with Exhibit A and Exhibit A.1, and at the prices set forth in Exhibit B. Subject to the sections in this Contract concerning Force Majeure, Termination and Open Market Purchases, the Contract shall bind the Agency to order the Goods or Services from the Contractor, and to pay for the accepted Goods or Services in accordance with Exhibit B.
8. Contract Amendments. No amendment to or modification or other alteration of the Contract shall be valid or binding upon the State unless made in writing, signed by both parties and, if applicable, approved by the Connecticut Attorney General.
9. Assignment. The Contractor shall not assign any of its rights or obligations under the Contract, voluntarily or otherwise, in any manner without the prior written consent of the Agency. The Agency may void any purported assignment in violation of this section and declare the Contractor in breach of Contract. Any Termination by the Agency for a breach is without prejudice to the Agency's or the State's rights or possible Claims.
10. Termination.
  - (a) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may Terminate the Contract whenever the Agency makes a written determination that such Termination is in the best interests of the State. The Agency shall notify the Contractor in writing of Termination pursuant to this section, which notice shall specify the effective date of Termination and the extent to which the Contractor must complete its Performance under the Contract prior to such date.
  - (b) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may, after making a written determination that the Contractor has breached the Contract, Terminate the Contract in accordance with the provisions in the Breach section of this Contract.
  - (c) The Agency shall send the notice of Termination via certified mail, return receipt requested, to the Contractor at the most current address which the Contractor has furnished to the Agency for purposes of correspondence, or by hand delivery. Upon receiving the notice from the Agency, the Contractor shall immediately discontinue all services affected in accordance with the notice, undertake all commercially reasonable efforts to mitigate any losses or damages, and deliver to the Agency all Records. The Records are deemed to be the property of the Agency and the Contractor shall deliver them to the Agency no later than thirty (30) days after the Termination of the Contract or fifteen (15) days after the Contractor receives a written request from the Agency for the Records. The Contractor shall deliver those Records that exist in electronic, magnetic or other intangible form in a non-proprietary format, such as, but not limited to, ASCII or .TXT.
  - (d) Upon receipt of a written notice of Termination from the Agency, the Contractor shall cease operations as the Agency directs in the notice, and take all actions that are necessary or appropriate, or that the Agency may reasonably direct, for the protection, and preservation of the Goods and any other property. Except for any work which the Agency directs the Contractor to Perform in the notice prior to the effective date of Termination, and except as otherwise provided in the notice, the Contractor shall terminate or conclude all existing subcontracts and purchase orders and shall not enter into any further subcontracts, purchase orders or commitments.
  - (e) The Agency shall, within forty-five (45) days of the effective date of Termination, reimburse the Contractor for its Performance rendered and accepted by the Agency in accordance with Exhibit A, in addition to all actual and reasonable costs incurred after Termination in completing those portions of the Performance which the notice required the Contractor to complete. However, the Contractor is



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not entitled to receive and the Agency is not obligated to tender to the Contractor any payments for anticipated or lost profits. Upon request by the Agency, the Contractor shall assign to the Agency, or any replacement contractor which the Agency designates, all subcontracts, purchase orders and other commitments, deliver to the Agency all Records and other information pertaining to its Performance, and remove from State premises, whether leased or owned, all of Contractor's property, equipment, waste material and rubbish related to its Performance, all as the Agency may request.

- (f) For breach or violation of any of the provisions in the section concerning Representations and Warranties, the Agency may Terminate the Contract in accordance with its terms and revoke any consents to assignments given as if the assignments had never been requested or consented to, without liability to the Contractor or Contractor Parties or any third party.
- (g) Upon Termination of the Contract, all rights and obligations shall be null and void, so that no party shall have any further rights or obligations to any other party, except with respect to the sections which survive Termination. All representations, warranties, agreements and rights of the parties under the Contract shall survive such Termination to the extent not otherwise limited in the Contract and without each one of them having to be specifically mentioned in the Contract.
- (h) Termination of the Contract pursuant to this section shall not be deemed to be a breach of contract by the Agency.

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

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

13. Waiver.

- (a) No waiver of any breach of the Contract shall be interpreted or deemed to be a waiver of any other or subsequent breach. All remedies afforded in the Contract shall be taken and construed as cumulative, that is, in addition to every other remedy provided in the Contract or at law or in equity.
- (b) A party's failure to insist on strict performance of any provision of the Contract shall only be deemed to be a waiver of rights and remedies concerning that specific instance of Performance and shall not be deemed to be a waiver of any subsequent rights, remedies or breach.

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

15. Purchase Orders.

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

16. Indemnification.

- (a) The Contractor shall indemnify, defend and hold harmless the State and its officers, representatives, agents, servants, employees, successors and assigns from and against any and all (1) Claims arising, directly or indirectly, in connection with the Contract, including the acts of commission or omission (collectively, the "Acts") of the Contractor or Contractor Parties; and (2) liabilities, damages, losses, costs and expenses, including but not limited to, attorneys' and other professionals' fees, arising, directly or indirectly, in connection with Claims, Acts or the Contract. The Contractor shall use counsel reasonably acceptable to the State in carrying out its obligations under this section. The Contractor's obligations under this section to indemnify, defend and hold harmless against Claims includes Claims concerning confidentiality of any part of or all of the Contractor's bid, proposal or any Records, any intellectual property rights, other proprietary rights of any person or entity, copyrighted or uncopyrighted compositions, secret processes, patented or unpatented inventions, articles or appliances furnished or used in the Performance.

- (b) The Contractor shall not be responsible for indemnifying or holding the State harmless from any liability arising due to the negligence of the State or any other person or entity acting under the direct control or supervision of the State.
  - (c) The Contractor shall reimburse the State for any and all damages to the real or personal property of the State caused by the Acts of the Contractor or any Contractor Parties. The State shall give the Contractor reasonable notice of any such Claims.
  - (d) The Contractor's duties under this section shall remain fully in effect and binding in accordance with the terms and conditions of the Contract, without being lessened or compromised in any way, even where the Contractor is alleged or is found to have merely contributed in part to the Acts giving rise to the Claims and/or where the State is alleged or is found to have contributed to the Acts giving rise to the Claims.
  - (e) The Contractor shall carry and maintain at all times during the term of the Contract, and during the time that any provisions survive the term of the Contract, sufficient general liability insurance to satisfy its obligations under this Contract. The Contractor shall cause the State to be named as an additional insured on the policy and shall provide (1) a certificate of insurance, (2) the declaration page and (3) the additional insured endorsement to the policy to DAS and the Client Agency all in an electronic format acceptable to DAS prior to the Effective Date of the Contract evidencing that the State is an additional insured. The Contractor shall not begin Performance until the delivery of these three (3) documents to the Client Agency. Contractor shall provide an annual electronic update of the three (3) documents to the Client Agency and DAS on or before each anniversary of the Effective Date during the Contract term. State shall be entitled to recover under the insurance policy even if a body of competent jurisdiction determines that State is contributorily negligent.
  - (f) This section shall survive the Termination of the Contract and shall not be limited by reason of any insurance coverage.
17. Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.
18. Contractor Guaranties. Contractor shall:
- (a) Perform fully under the Contract;
  - (b) Guarantee the Goods or Services against defective material or workmanship and to repair any damage or marring occasioned in transit or, at the Agency's option, replace them;
  - (c) Furnish adequate protection from damage for all work and to repair damage of any kind, for which its workers are responsible, to the premises, Goods, the Contractor's work or that of Contractor Parties;

- (d) With respect to the provision of Services, pay for all permits, licenses and fees and give all required or appropriate notices;
- (e) Adhere to all Contractual provisions ensuring the confidentiality of Records that the Contractor has access to and are exempt from disclosure under the State's Freedom of Information Act or other applicable law; and
- (f) Neither disclaim, exclude nor modify the implied warranties of fitness for a particular purpose or of merchantability.

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

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

21. Delivery.

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

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

23. Emergency Standby for Goods and/or Services. If any Federal or State official, having authority to do so, declares an emergency or the occurrence of a natural disaster within the State of Connecticut, the Agency may request the Goods and Services on an expedited and prioritized basis. Upon receipt of such a request the Contractor shall make all necessary and appropriate commercially reasonable efforts to reallocate its staffing and other resources in order to give primary preference to Performing

this Contract ahead of or prior to fulfilling, in whole or in part, any other contractual obligations that the Contractor may have. The Contractor is not obligated to make those efforts to Perform on an expedited and prioritized basis in accordance with this paragraph if doing so will make the Contractor materially breach any other contractual obligations that the Contractor may have. Contractor shall acknowledge receipt of any request made pursuant to this paragraph within 2 hours from the time that the Contractor receives it via purchase order or through a request to make an expedited or prioritized purchase through the State of Connecticut Purchasing Card (MasterCard) Program (the "P-Card Program"). If the Contractor fails to acknowledge receipt within 2 hours, confirm its obligation to Perform or actually Perform, as set forth in the purchase order or through the P-Card Program, then the Agency may procure the Performance from another source without further notice to Contractor and without creating any right of recourse at law or in equity against the Agency.

24. Setoff. In addition to all other remedies available hereunder, the State, in its sole discretion, may setoff (1) any costs or expenses that the State incurs resulting from the Contractor's unexcused nonperformance under the Contract and under any other agreement or arrangement that the Contractor has with the State and (2) any other amounts that are due or may become due from the State to the Contractor, against amounts otherwise due or that may become due to the Contractor under the Contract, or under any other agreement or arrangement that the Contractor has with the State. The State's right of setoff shall not be deemed to be the State's exclusive remedy for the Contractor's or Contractor Parties' breach of the Contract, all of which shall survive any setoffs by the State.
25. Force Majeure. The Agency and the Contractor shall not be excused from their obligation to Perform in accordance with the Contract except in the case of Force Majeure events and as otherwise provided for in the Contract. In the case of any such exception, the nonperforming party shall give immediate written notice to the other, explaining the cause and probable duration of any such nonperformance.
26. Advertising. The Contractor shall not refer to sales to the State for advertising or promotional purposes, including, but not limited to, posting any material or data on the Internet, without the Agency's prior written approval.
27. Americans With Disabilities Act. The Contractor shall be and remain in compliance with the Americans with Disabilities Act of 1990 ("Act"), to the extent applicable, during the term of the Contract. The Agency may Terminate the Contract if the Contractor fails to comply with the Act.
28. Representations and Warranties. The Contractor, represents and warrants to Agency for itself and Contractor Parties, that:
- (a) if they are entities, they are duly and validly existing under the laws of their respective states of organization and authorized to conduct business in the State of Connecticut in the manner contemplated by the Contract. Further, as appropriate, they have taken all necessary action to authorize the execution, delivery and Performance of the Contract and have the power and authority to execute, deliver and Perform their obligations under the Contract;
  - (b) they will comply with all applicable State and Federal laws and municipal ordinances in satisfying their obligations to the Agency under and pursuant to the Contract, including, but not limited to (1) Connecticut General Statutes Title 1, Chapter 10, concerning the State's Codes of Ethics and (2) Title 4a concerning State purchasing, including, but not limited to Section 22a-194a concerning the use of polystyrene foam;
  - (c) the execution, delivery and Performance of the Contract will not violate, be in conflict with, result in a breach of or constitute (with or without due notice and/or lapse of time) a default under any of the

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following, as applicable: (1) any provision of law; (2) any order of any court or the State; or (3) any indenture, agreement, document or other instrument to which it is a party or by which it may be bound;

- (d) they are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any governmental entity;
- (e) as applicable, they have not, within the three years preceding the Contract, in any of their current or former jobs, been convicted of, or had a civil judgment rendered against them or against any person who would Perform under the Contract, for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a transaction or contract with any governmental entity. This includes, but is not limited to, violation of Federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (f) they are not presently indicted for or otherwise criminally or civilly charged by any governmental entity with commission of any of the offenses listed above;
- (g) they have not within the three years preceding the Contract had one or more contracts with any governmental entity Terminated;
- (h) they have not employed or retained any entity or person, other than a bona fide employee working solely for them, to solicit or secure the Contract and that they have not paid or agreed to pay any entity or person, other than a bona fide employee working solely for them, any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from the award or making of the Contract or any assignments made in accordance with the terms of the Contract;
- (i) to the best of their knowledge, there are no Claims involving the Contractor or Contractor Parties that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract;
- (j) they shall disclose, to the best of their knowledge, to the Agency in writing any Claims involving them that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract, no later than ten (10) Days after becoming aware or after they should have become aware of any such Claims. For purposes of the Contractor's obligation to disclose any Claims to the Agency, the ten (10) Days in the section of this Contract concerning Disclosure of Contractor Parties Litigation shall run consecutively with the ten (10) Days provided for in this representation and warranty;
- (k) their participation in the Solicitation process is not a conflict of interest or a breach of ethics under the provisions of Title 1, Chapter 10 of the Connecticut General Statutes concerning the State's Code of Ethics;
- (l) the Bid was not made in connection or concert with any other person or entity, including any affiliate (as defined in the Tangible Personal Property section of this Contract) of the Contractor, submitting a bid for the same Goods or Services, and is in all respects fair and without collusion or fraud;
- (m) they are able to Perform under the Contract using their own resources or the resources of a party who is not a Contractor;

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- (n) the Contractor shall obtain in a written contract all of the representations and warranties in this section from any Contractor Parties and to require that provision to be included in any contracts and purchase orders with Contractor Parties;
- (o) they have paid all applicable workers' compensation second injury fund assessments concerning all previous work done in Connecticut;
- (p) they have a record of compliance with Occupational Health and Safety Administration regulations without any unabated, willful or serious violations;
- (q) they owe no unemployment compensation contributions;
- (r) they are not delinquent in the payment of any taxes owed, or, that they have filed a sales tax security bond, and they have, if and as applicable, filed for motor carrier road tax stickers and have paid all outstanding road taxes;
- (s) all of their vehicles have current registrations and, unless such vehicles are no longer in service, they shall not allow any such registrations to lapse;
- (t) each Contractor Party has vested in the Contractor plenary authority to bind the Contractor Parties to the full extent necessary or appropriate to ensure full compliance with and Performance in accordance with all of the terms and conditions of the Contract and that all appropriate parties shall also provide, no later than fifteen (15) days after receiving a request from the Agency, such information as the Agency may require to evidence, in the Agency's sole determination, compliance with this section;
- (u) except to the extent modified or abrogated in the Contract, all Title shall pass to the Agency upon complete installation, testing and acceptance of the Goods or Services and payment by the Agency;
- (v) if either party Terminates the Contract, for any reason, they shall relinquish to the Agency all Title to the Goods delivered, accepted and paid for (except to the extent any invoiced amount is disputed) by the Agency;
- (w) with regard to third party products provided with the Goods, they shall transfer all licenses which they are permitted to transfer in accordance with the applicable third party license;
- (x) they shall not copyright, register, distribute or claim any rights in or to the Goods after the Effective Date of the Contract without the Agency's prior written consent;
- (y) they either own or have the authority to use all Title of and to the Goods, and that such Title is not the subject of any encumbrances, liens or claims of ownership by any third party;
- (z) the Goods do not infringe or misappropriate any patent, trade secret or other intellectual property right of a third party;
- (aa) the Agency's use of any Goods shall not infringe or misappropriate any patent, trade secret or other intellectual property right of a third party;
- (bb) if they procure any Goods, they shall sub-license such Goods and that the Agency shall be afforded the full benefits of any manufacturer or subcontractor licenses for the use of the Goods; and

(cc) they shall assign or otherwise transfer to the Agency, or afford the Agency the full benefits of any manufacturer's warranty for the Goods, to the extent that such warranties are assignable or otherwise transferable to the Agency.

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

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

(b) Each such motor vehicle shall be fully insured in accordance with the provisions of Sections 14-12b, 14-112 and 38a-371 of the Connecticut General Statutes, as amended, in the amounts required by the said sections or in such higher amounts as have been specified by ConnDMV as a condition for the award of the Contract, or in accordance with all substantially similar provisions imposed by the law of the jurisdiction where the motor vehicle is registered.

(c) Each Contractor Party who uses or operates a motor vehicle at any time in the Performance of the Contract shall have and maintain a motor vehicle operator's license or commercial driver's license of the appropriate class for the motor vehicle being used or operated. Each such license shall bear the endorsement or endorsements required by the provisions of Section 14-36a of the Connecticut General Statutes, as amended, to operate such motor vehicle, or required by substantially similar provisions imposed by the law of another jurisdiction in which the operator is licensed to operate such motor vehicle. The license shall be in valid status, and shall not be expired, suspended or revoked by ConnDMV or such other jurisdiction for any reason or cause.

(d) Each motor vehicle shall be in full compliance with all of the terms and conditions of all provisions of the Connecticut General Statutes and regulations, or those of the jurisdiction where the motor vehicle is registered, pertaining to the mechanical condition, equipment, marking and operation of motor vehicles of such type, class and weight, including, but not limited to, requirements for intrastate carriers with motor vehicles having a gross vehicle weight rating or gross combination weight rating or gross vehicle weight or gross combination weight of 18,001 pounds or more or interstate carriers with motor vehicles having a gross vehicle weight rating or gross combination weight rating or gross vehicle weight or gross combination weight of 10,001 pounds or more otherwise described by the provisions of Conn. Gen. Stat. § 14-163c(a) and all applicable provisions of the Federal Motor Carrier Safety Regulations, as set forth in Title 49, Parts 382 to 399, inclusive, of the Code of Federal Regulations. If the Contractor is a "motor carrier," as that term is defined in section 49 CFR Part 390, and the Contractor is subject to an



order issued by the Federal Motor Carrier Safety Administration that prohibits such Contractor from operating or allowing the operation of a motor vehicle, then the Contractor shall comply fully with such order. In addition, if a motor vehicle or its operator is declared out of service pursuant to Conn. Gen. Stat. § 14-163c(d)(4), then the Contractor shall not operate or allow the operation of that motor vehicle and shall not allow the operator to operate a motor vehicle while the respective subject out-of-service order is in effect.

30. Disclosure of Contractor Parties Litigation. The Contractor shall require that all Contractor Parties, as appropriate, disclose to the Contractor, to the best of their knowledge, any Claims involving the Contractor Parties that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract, no later than ten (10) Days after becoming aware or after they should have become aware of any such Claims. Disclosure shall be in writing.
31. Entirety of Contract. The Contract is the entire agreement between the parties with respect to its subject matter, and supersedes all prior agreements, proposals, offers, counteroffers and understandings of the parties, whether written or oral. The Contract has been entered into after full investigation, neither party relying upon any statement or representation by the other unless such statement or representation is specifically embodied in the Contract.
32. Exhibits. All exhibits referred to in and attached to this Contract are incorporated in this Contract by such reference and shall be deemed to be a part of it as if they had been fully set forth in it.
33. Executive Orders. This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. The Contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order 14 and/or Executive Order 49 are applicable, they are deemed to be incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, the Client Agency or DAS shall provide a copy of these orders to the Contractor.
34. Non-discrimination.

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

- (1) "Commission" means the Commission on Human Rights and Opportunities;
- (2) "Contract" and "contract" include any extension or modification of the Contract or contract;
- (3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- (4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from

that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.

(5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;

(6) "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;

(7) "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;

(8) "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;

(9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and

(10) "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

(b)

(1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of

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

- (c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.
- (d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.
- (e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.
- (f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g)

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

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

### 35. Tangible Personal Property.

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

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;

(2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;

(3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;

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

If to the Agency:

State of Connecticut Department of Transportation

ADDRESS: 2800 Berlin Turnpike  
Newington, CT 06131-7546  
Attention: Business Services & Inventory Management – 2416 SW

If to the Contractor:

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Attention: \_\_\_\_\_

38. Insurance. Before commencing Performance, the Contractor shall obtain and maintain at its own cost and expense for the duration of the Contract, the following insurance as described in (a) through (h) below. Contractor shall assume any and all deductibles in the described insurance policies. The Contractor's insurers shall have no right of recovery or subrogation against the State and the described Contractor's insurance shall be primary coverage. Any failure to comply with the claim reporting provisions of the policy shall not affect coverage provided to the State.

(a) Commercial General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall include, Premises and Operations, Independent Contractors, Products and Completed Operations, Contractual Liability and Broad Form Property Damage coverage. If a general aggregate is used, the general aggregate limit shall apply separately to the project or the general aggregate limit shall be twice the occurrence limit.

(b) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury. Coverage extends to owned, hired and non-owned automobiles. If the vendor/contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. If a vehicle is not used in the execution of the contract then automobile coverage is not required.

(c) Workers' Compensation and Employers Liability: Statutory coverage in compliance with the Compensation laws of the State of Connecticut. Coverage shall include Employer's Liability with minimum limits of \$100,000 each accident, \$500,000 Disease – Policy limit, \$100,000 each employee.

39. Headings. The headings given to the sections in the Contract are inserted only for convenience and are in no way to be construed as part of the Contract or as a limitation of the scope of the particular section to which the heading refers.

40. Number and Gender. Whenever the context so requires, the plural or singular shall include each other and the use of any gender shall include all genders.

41. Parties. To the extent that any Contractor Party is to participate or Perform in any way, directly or indirectly in connection with the Contract, any reference in the Contract to "Contractor" shall also be deemed to include "Contractor Parties," as if such reference had originally specifically included "Contractor Parties" since it is the parties' intent for the terms "Contractor Parties" to be vested with the same respective rights and obligations as the term "Contractor."

42. Contractor Changes. The Contractor shall notify the Agency in writing no later than ten (10) Days from the effective date of any change in:

- (a) its certificate of incorporation or other organizational document;
- (b) more than a controlling interest in the ownership of the Contractor; or
- (c) the individual(s) in charge of the Performance.

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

43. Further Assurances. The parties shall provide such information, execute and deliver any instruments and documents and take such other actions as may be necessary or reasonably requested by the other party which are not inconsistent with the provisions of this Contract and which do not involve the vesting of rights or assumption of obligations other than those provided for in the Contract, in order to give full effect to the Contract and to carry out the intent of the Contract.

44. Audit and Inspection of Plants, Places of Business and Records.

- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract.
- (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of it's and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.
- (c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.

- (d) The Contractor will pay for all costs and expenses of any audit or inspection which reveals information that, in the sole determination of the State, is sufficient to constitute a breach by the Contractor under this Contract. The Contractor will remit full payment to the State for such audit or inspection no later than 30 days after receiving an invoice from the State. If the State does not receive payment within such time, the State may setoff the amount from any moneys which the State would otherwise be obligated to pay the Contractor in accordance with this Contract's Setoff provision.
  - (e) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Contract, or (ii) the expiration or earlier termination of this Contract, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
  - (f) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
  - (g) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.
45. Background Checks. The State may require that the Contractor and Contractor Parties undergo criminal background checks as provided for in the State of Connecticut Department of Emergency Services and Public Protection Administration and Operations Manual or such other State document as governs procedures for background checks. The Contractor and Contractor Parties shall cooperate fully as necessary or reasonably requested with the State and its agents in connection with such background checks.
46. Continued Performance. The Contractor and Contractor Parties shall continue to Perform their obligations under the Contract while any dispute concerning the Contract is being resolved.
47. Working and Labor Synergies. The Contractor shall be responsible for maintaining a tranquil working relationship between the Contractor work force, the Contractor Parties and their work force, State employees, and any other contractors present at the work site. The Contractor shall quickly resolve all labor disputes which result from the Contractor's or Contractor Parties' presence at the work site, or other action under their control. Labor disputes shall not be deemed to be sufficient cause to allow the Contractor to make any claim for additional compensation for cost, expenses or any other loss or damage, nor shall those disputes be deemed to be sufficient reason to relieve the Contractor from any of its obligations under the Contract.
48. Contractor Responsibility.
- (a) The Contractor shall be responsible for the entire Performance under the Contract regardless of whether the Contractor itself performs. The Contractor shall be the sole point of contact concerning the management of the Contract, including Performance and payment issues. The Contractor is solely and completely responsible for adherence by the Contractor Parties to all applicable provisions of the Contract.



(b) The Contractor shall exercise all reasonable care to avoid damage to the State's property or to property being made ready for the State's use, and to all property adjacent to any work site. The Contractor shall promptly report any damage, regardless of cause, to the State.

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

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

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

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

52. Cross-Default.

(a) If the Contractor or Contractor Parties breach, default or in any way fail to Perform satisfactorily under the Contract, then the Agency may, in its sole discretion, without more and without any action whatsoever required of the Agency, treat any such event as a breach, default or failure to perform

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

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

53. Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.

54. Summary of State Ethics Laws. Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

55. Sovereign Immunity. The parties acknowledge and agree that nothing in the Solicitation or the Contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Contract. To the extent that this section conflicts with any other section, this section shall govern.

56. Time of the Essence. Time is of the essence with respect to all provisions of this Contract that specify a time for performance; provided, however, that this provision shall not be construed to limit or deprive a party of the benefits of any grace or use period allowed in this Contract.

57. Certification as Small Contractor or Minority Business Enterprise. The Contractor shall be in breach of this Contract if the Contractor is certified as a "small contractor" or a "minority business enterprise" under Conn. Gen. Stat. § 4a-60g and that certification lapses during the term of this Contract.

58. Campaign Contribution Restriction. For all State contracts as defined in Conn. Gen. Stat. § 9-612(g)(1) having a value in a calendar year of \$50,000 or more or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this Contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals

of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," attached as Exhibit C.

59. Health Insurance Portability and Accountability Act.

- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), as noted in this Contract, the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.
- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The Client Agency is a "covered entity" as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor is a "business associate" of the Agency, as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor and the Client Agency agree to the following in order to secure compliance with HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act ("HITECH Act"), (Pub. L. 111-5, §§ 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, D and E (collectively referred to herein as the "HIPAA Standards").
- (f) Definitions
  - (1) "Breach" shall have the same meaning as the term is defined in section 45 C.F.R. 164.402 and shall also include any use or disclosure of PHI that violates the HIPAA Standards.
  - (2) "Business Associate" shall mean the Contractor.
  - (3) "Covered Entity" shall mean the Client Agency.
  - (4) "Designated Record Set" shall have the same meaning as the term "designated record set" in 45 C.F.R. § 164.501.

- (5) "Electronic Health Record" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5)).
  - (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
  - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and part 164, subparts A and E.
  - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, and includes electronic PHI, as defined in 45 C.F.R. 160.103, limited to information created, maintained, transmitted or received by the Business Associate from or on behalf of the Covered Entity or from another Business Associate of the Covered Entity.
  - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.
  - (10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his or her designee.
  - (11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.
  - (12) "This Section of the Contract" refers to the HIPAA provisions stated herein, in their entirety.
  - (13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.
  - (14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and part 164, subpart A and C.
  - (15) "Unsecured protected health information" shall have the same meaning as the term as defined in 45 C.F.R. 164.402.
- (g) Obligations and Activities of Business Associates.
- (1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.

- (2) Business Associate agrees to use and maintain appropriate safeguards and comply with applicable HIPAA Standards with respect to all PHI and to prevent use or disclosure of PHI other than as provided for in this Section of the Contract and in accordance with HIPAA Standards.
- (3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic Protected Health Information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.
- (4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.
- (5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any Security Incident of which it becomes aware.
- (6) Business Associate agrees, in accordance with 45 C.F.R. 502(e)(1)(ii) and 164.308(d)(2), if applicable, to ensure that any subcontractors that create, receive, maintain or transmit PHI on behalf of the Business Associate, agree to the same restrictions, conditions, and requirements that apply to the business associate with respect to such information;
- (7) Business Associate agrees to provide access (including inspection, obtaining a copy or both), at the request of the Covered Entity, and in the time and manner designated by the Covered Entity, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524. Business Associate shall not charge any fees greater than the lesser of the amount charged by the Covered Entity to an Individual for such records; the amount permitted by state law; or the Business Associate's actual cost of postage, labor and supplies for complying with the request.
- (8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner designated by the Covered Entity.
- (9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created, maintained, transmitted or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and

manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary investigating or determining Covered Entity's compliance with the HIPAA Standards..

- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner designated by the Covered Entity, information collected in accordance with subsection (g)(10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any State or federal law that is more stringent than the Privacy Rule.
- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. §§ 164.504(e), 164.308, 164.310, 164.312, and 164.316.
- (14) In the event that an Individual requests that the Business Associate
  - (A) restrict disclosures of PHI;
  - (B) provide an accounting of disclosures of the Individual's PHI;
  - (C) provide a copy of the Individual's PHI in an Electronic Health Record; or
  - (D) amend PHI in the Individual's Designated Record Set the Business Associate agrees to notify the Covered Entity, in writing, within five Days of the request.

- (15) Business Associate agrees that it shall not, and shall ensure that its subcontractors do not, directly or indirectly, receive any remuneration in exchange for PHI of an Individual without
- (A) the written approval of the Covered Entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and
  - (B) the valid authorization of the Individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act, (42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach.
- (A) The Business Associate agrees that, following the discovery by the Business Associate or by a subcontractor of the Business Associate of any use or disclosure not provided for by this section of the Contract, any breach of Unsecured protected health information, or any Security Incident, it shall notify the Covered Entity of such Breach in accordance with Subpart D of Part 164 of Title 45 of the Code of Federal Regulations and this Section of the Contract.
  - (B) Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the Breach is discovered by the Business Associate, or a subcontractor of the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to 45 C.F.R. 164.412. A Breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate or its subcontractor. The notification shall include the identification and last known address, phone number and email address of each Individual (or the next of kin of the individual if the Individual is deceased) whose Unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such Breach.
  - (C) The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
    - 1. A description of what happened, including the date of the Breach; the date of the discovery of the Breach; the unauthorized person, if known, who used the PHI or to whom it was disclosed; and whether the PHI was actually acquired or viewed.

2. A description of the types of Unsecured protected health information that were involved in the Breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
3. The steps the Business Associate recommends that Individual(s) take to protect themselves from potential harm resulting from the Breach.
4. A detailed description of what the Business Associate is doing or has done to investigate the Breach, to mitigate losses, and to protect against any further Breaches.
5. Whether a law enforcement official has advised the Business Associate, either verbally or in writing, that he or she has determined that notification or notice to Individuals or the posting required under 45 C.F.R. 164.412 would impede a criminal investigation or cause damage to national security and; if so, contact information for said official.

(D) If directed by the Covered Entity, the Business Associate agrees to conduct a risk assessment using at least the information in subparagraphs 1 to 4, inclusive of (g) (16) (C) of this Section and determine whether, in its opinion, there is a low probability that the PHI has been compromised. Such recommendation shall be transmitted to the Covered Entity within 20 business days of the Business Associate's notification to the Covered Entity.

(E) If the Covered Entity determines that there has been a Breach, as defined in 45 C.F.R. 164.402, by the Business Associate or a subcontractor of the Business Associate, the Business Associate, if directed by the Covered Entity, shall provide all notifications required by 45 C.F.R. 164.404 and 45 C.F.R. 164.406.

(F) Business Associate agrees to provide appropriate staffing and have established procedures to ensure that Individuals informed of a Breach have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its website and a postal address. Business Associate agrees to include in the notification of a Breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Business Associate.



- (G) Business Associate agrees that, in the event of a Breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.
  
- (h) Permitted Uses and Disclosure by Business Associate.
  - (1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the HIPAA Standards if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.
  
  - (2) Specific Use and Disclosure Provisions
    - (A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.
  
    - (B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.
  
    - (C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide data aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).
  
- (i) Obligations of Covered Entity.
  - (1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45

C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.

- (2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual(s) to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.
  - (3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.
- (j) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the HIPAA Standards if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.
- (k) Term and Termination.
- (1) Term. The term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with provision (g)(10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.
  - (2) Termination for Cause Upon Covered Entity's knowledge of a material Breach by Business Associate, Covered Entity shall either:
    - (A) Provide an opportunity for Business Associate to cure the Breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity in accordance with Section 11 of the Contract; or
    - (B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or
    - (C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

- (3) Effect of Termination.
  - (A) Except as provided in (k)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created, maintained, or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with section (g)(10) of this Section of the Contract to the Covered Entity within ten Days of the notice of termination. This section shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.
  - (B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under State or federal law that the Business Associate maintains or preserves the PHI or copies thereof.
- (l) Miscellaneous Sections.
  - (1) Regulatory References. A reference in this Section of the Contract to a section in the HIPAA Standards means the section as in effect or as amended.
  - (2) Amendment. The parties agree to take such action as is necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of HIPAA, the HITECH Act and the HIPAA Standards (all as amended).
  - (3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.
  - (4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

- (5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with HIPAA, the HITECH Act and the HIPAA Standards (all as amended). Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, HIPAA, the HITECH Act and the HIPAA Standards. (all as amended)
- (6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the sections of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.
- (7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, the HIPAA Standards, or the HITECH Act (all as amended), including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this Section of the Contract, under HIPAA, the HITECH Act, and the HIPAA Standards.

**60. Protection of Confidential Information.**

- (a) Contractor and Contractor Parties, at their own expense, have a duty to and shall protect from a Confidential Information Breach any and all Confidential Information which they come to possess or control, wherever and however stored or maintained, in a commercially reasonable manner in accordance with current industry standards.
- (b) Each Contractor or Contractor Party shall develop, implement and maintain a comprehensive data - security program for the protection of Confidential Information. The safeguards contained in such program shall be consistent with and comply with the safeguards for protection of Confidential Information, and information of a similar character, as set forth in all applicable federal and state law and written policy of the Agency or State concerning the confidentiality of Confidential Information. Such data-security program shall include, but not be limited to, the following:

- (1) A security policy for employees related to the storage, access and transportation of data containing Confidential Information;
  - (2) Reasonable restrictions on access to records containing Confidential Information, including access to any locked storage where such records are kept;
  - (3) A process for reviewing policies and security measures at least annually;
  - (4) Creating secure access controls to Confidential Information, including but not limited to passwords; and
  - (5) Encrypting of Confidential Information that is stored on laptops, portable devices or being transmitted electronically.
- (c) The Contractor and Contractor Parties shall notify the Agency and the Connecticut Office of the Attorney General as soon as practical, but no later than twenty-four (24) hours, after they become aware of or suspect that any Confidential Information which Contractor or Contractor Parties have come to possess or control has been subject to a Confidential Information Breach. If a Confidential Information Breach has occurred, the Contractor shall, within three (3) business days after the notification, present a credit monitoring and protection plan to the Commissioner of Administrative Services, the Agency and the Connecticut Office of the Attorney General, for review and approval. Such credit monitoring or protection plan shall be made available by the Contractor at its own cost and expense to all individuals affected by the Confidential Information Breach. Such credit monitoring or protection plan shall include, but is not limited to reimbursement for the cost of placing and lifting one (1) security freeze per credit file pursuant to Connecticut General Statutes § 36a-701a. Such credit monitoring or protection plans shall be approved by the State in accordance with this Section and shall cover a length of time commensurate with the circumstances of the Confidential Information Breach. The Contractor's costs and expenses for the credit monitoring and protection plan shall not be recoverable from the Agency, any State of Connecticut entity or any affected individuals.
- (d) The Contractor shall incorporate the requirements of this Section in all subcontracts requiring each Contractor Party to safeguard Confidential Information in the same manner as provided for in this Section.
- (e) Nothing in this Section shall supersede in any manner Contractor's or Contractor Party's obligations pursuant to HIPAA or the provisions of this Contract concerning the obligations of the Contractor as a Business Associate of Covered Entity.
61. Audit Requirements for Recipients of State Financial Assistance. For purposes of this paragraph, the word "contractor" shall be deemed to mean "nonstate entity," as that term is defined in Section 4-230 of the Connecticut General Statutes. The contractor shall provide for an annual financial audit acceptable to the Agency for any expenditure of state-awarded funds made by the contractor. Such audit shall include management letters and audit recommendations. The State Auditors of Public

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Accounts shall have access to all records and accounts for the fiscal year(s) in which the award was made. The contractor will comply with federal and state single audit standards as applicable.

62. Antitrust Claims. Contractor hereby irrevocably assigns to the State of Connecticut all rights, title and interest in and to all Claims associated with this Contract that Contractor now has or may or will have and that arise under the antitrust laws of the United States, 15 USC Section 1, *et seq.* and the antitrust laws of the State of Connecticut, Connecticut General Statute § 35-24, *et seq.*, including but not limited to any and all Claims for overcharges. This assignment shall become valid and effective immediately upon the accrual of a Claim without any further action or acknowledgment by the parties.

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

[CONTRACTOR NAME]

STATE OF CONNECTICUT  
Department Of Transportation

By: \_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
Print or Type Name

\_\_\_\_\_  
Print or Type Name

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_