Clermont Transportation Connection

Heavy Duty Transit Bus
Request for Bid

2010

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OVERVIEW

This Request for Bid (RFB) is being offered on behalf of the Board of Clermont County Commissioners, doing business as the Clermont Transportation Connection for the purchase and delivery of one (1) Heavy Duty Transit Bus for the Clermont Transportation Connection (CTC)

SECTION 1: REQUIRED CONTENTS OF ALL BIDS

All bids submitted in response to this RFB should be organized as follows and be sent in duplicate:

1. A copy of this RFB

2. Bid Proposal Form (Pricing per the specifications)

3. Letter of Transmittal signed by an officer of the company or signed by another employee and accompanied by an affidavit of authority to bind the company.

4. Completion of all Affidavits, Forms, & Certifications included in Section 4 of this request for bid.

5. Bid Guaranty Bond/Bond Check

6. Required Contractor Information/Qualifications

The Clermont Sun:

Legal Notice

The Board of Clermont County Commissioners will be accepting sealed bids for Furnishing and Delivery of one (1) Heavy Duty Transit Bus for the Clermont Transportation Connection. All bids shall be submitted in a sealed envelope marked: **Bid – HEAVY DUTY TRANSIT BUS**, and must be received in the Office of the Board of County Commissioners, 101 E. Main Street, Batavia, Ohio 45103, no later than **2:00 PM.** local time on **Thursday, April 15th, 2010** , at which time all bids shall be opened and read aloud publicly.

Instructions to bidders, specifications, and bid form outlining the terms and conditions of the proposed purchase may be obtained by interested bidders during normal working hours of 8:00 a.m. to 4:30 p.m. Monday through Friday at the Clermont Transportation Connection Office located at 4003 Filager Rd., Batavia, Ohio, 45103, ATTN: Ben Capelle, 513-732-7577, Fax 513-732-7490.

Each bidder must submit their bid in **DUPLICATE,** one (1) originals and (1) copy. Each bidder must deposit with his bid, a certified check, cashier's check or money order drawn on a solvent bank or savings and loan association in the amount of five (5%) percent of the bid, paid to the order of the Clermont County Treasurer, or a Bid bond surety of five (5%) percent of the amount of the bid pursuant to the provisions of Section 307.88 of the Ohio Revised Code. Bid bonds must be filed with original signatures. Facsimile and electronic copies of the bid bond and Power of Attorney of the Surety will be deemed non-responsive.

The Board of County Commissioners reserves the right to waive any informalities, reject any or all bids and to hold such bids for a period of sixty (60) days before taking any action and to award a contract to the lowest and best bidder. No Bidder may withdraw his bid for a period of 60 days after the actual date of the opening thereof.

This notice is also posted on the contracting authority's internet site on the World Wide Web at the following address: www.clermontcountyohio.gov. and at www.ctc.clermontcountyohio.gov. In order to view the legal notice, click on the link Legal Notices or Bid Opportunities located on the Home Page of either website.

BOARD OF COUNTY COMMISSIONERS
CLERMONT COUNTY, OHIO

Robert L. Proud, President
Edwin H. Humphrey, Vice President
R. Scott Croswell III, Member

ATTEST:

_____
Judith Kocica, Clerk of the Board

Bill to: Clermont Transportation Connection, Attn. Sandy Moell, 4003 Filager Road, Batavia, Ohio 45103

SECTION 2: GENERAL INSTRUCTIONS TO BIDDERS

1. **Bid Submittal:**

Reply to: **Board of County Commissioners**
Clermont County
101 E. Main Street
Batavia, Ohio 45103

All bids submitted for consideration by the Board of Clermont County Commissioners must comply with these instructions in order to be considered. These instructions set forth minimum requirements as to the terms and conditions of the purchase. Therefore, if any time frames, bid bond or other surety requirements set forth herein are in conflict with stated requirements in the specifications, the specification requirements shall prevail.

2. **Schedule of Activities:** Bids Due and Opened: **Thursday, April 15th, 2010** at **2:00 PM** local time at the Office of the Board of Clermont County Commissioners, 101 E. Main Street, Batavia, Ohio 45103-2960.

3. **Vendor Requirements:** It is required that the bidder have prior experience/expertise in the area pertaining to the bid proposal items listed in the Legal Notice.

4. **Foreign Corporations:** a "foreign corporation" means a corporation incorporated under the laws of another state. No contract shall be entered into with a foreign corporation until the Secretary of State has certified that such corporation is authorized to do business in Ohio; and until, if the bidder so awarded the contract is a person or partnership, it has filed with the Secretary of State a Power of Attorney designating the Secretary of State as its agent for the purpose of accepting service of summons in any action brought under Section 153.05 of the Ohio Revised Code or under sections 4123.01 to 4123.94, inclusive, of the Revised Code.

5. **Implied Requirements:** All products and services not specifically mentioned in the bid, but which are necessary to provide the functional capabilities described by the vendor, shall be included in the vendor's base bid.

6. **Base and/or Alternate Bids:** Bids may contain descriptions of minor options or alternates which may be available to the County. Bid "A" will contain all products and services which are specifically mentioned in the bid request and all others necessary to provide the functional capabilities described by the vendor. Bid "A" shall be the Base Bid and is required by all bidders. Bids "B", "C" and so on will present options or alternatives that the vendor has available to the County. All bids must clearly identify and detail all costs on an item-by-item basis. Those bidders providing alternate bids must clearly distinguish such items as options. The County reserves the right to award a contract which includes the base bid

and/or any combination of alternate bids submitted by any vendor or a multiple of vendors.

7. **Multiple Bids:** Bidders who wish to submit multiple bids may do so. It is required that the bidder select one system as his "Base Bid (A)" and supply the complete information requested. If desired, the vendor may submit more than one base bid. Alternated bids will be indicated as alternate bids and lettered as "Bid B", Bid C", and so on.

8. **Indemnity:** Contractor hereby agrees to indemnify and hold the County harmless from any claims, demands or losses of any type or nature to any person, bidder or corporation arising in any manner from the contractor's performance or failure to perform the work required under this contract and shall pay any judgment or liability obtained or growing out of said claims, liabilities or judgments, including reasonable attorney's fees and costs.

9. **Vendor-supplied Materials:** Any material submitted by a vendor shall become the property of the County.

10. **Rejection of Bids:** The County reserves the right to reject any and all bids, to waive any informalities in the bidding procedure, to accept any bid which it deems to be for the best interest of the County and to hold such bids for a period of sixty (60) days before taking action to award a contract.

11. **Bid Identification and Submittal:** Bids shall be clearly marked on the envelope: "**Bid –Heavy Duty Transit Bus**" and include the bidders name and address. Bids must be in a sealed envelope submitted in duplicate (1 original and 1 copy). Replies must be received in the Office of the Board of County Commissioners no later than **2:00PM** local time on **Thursday, April, 15th, 2010.** Late Bids will not be considered. Bidders will not be permitted to alter their bids after bid closing. Should the bidder wish to mail in the bid, they should send them to the County at the address indicated in the legal notice and must be received by the County prior to the above date and time.

12. **Bid Opening:** Bid opening will occur at **2:00PM** local time on Thursday**, April 15th, 2010,** at the Office of the Board of Clermont County Commissioners, 101 E. Main Street, Batavia, Ohio 45103-2960.

13. **Bid Bond:** Bids must be accompanied by a certified check, cashier's check or money order drawn on a solvent bank or savings and loan association in the amount of five (5%) percent of the bid, paid to the order of the Clermont County Treasurer, or a Bid Bond surety of five (5%) percent of the amount of bid pursuant to the provisions of Section 307.88 of the Ohio Revised Code. **Facsimile and electronic copies of the bid bond and Power of Attorney of the Surety will be deemed non-responsive.**

The Bid Bond must be signed by an Authorized Agent of an acceptable Surety Bonding Company and by the Bidder. The Bid Bond must be countersigned by a Resident Agent (State of Ohio) of the Bonding Company as required by Section 5729.09 of the Ohio Revised Code. (Affix Corporate Seals to all copies). The name and address of both the Surety and Surety's Agent must appear on Bid Bond.

Bid Bonds must be supported by:

(1) Power of Attorney of the Agent, State of Ohio.
(2) Certificate showing the legal right of the company to do business in the State of Ohio.

Bids may be rejected if all required papers are not returned with the bid.

The bid bond shall be returned:

(a) If said bid shall be rejected.

(b) If said bid shall be accepted and the principal shall execute and deliver the contract properly completed in accordance with said bid; **and upon delivery of equipment.**

14. **Bid Duration:** All prices quoted by the bidder in their bid must remain unchanged for a period of sixty (60) days after the date of bid opening.

15. **Bid Suitability:** When analyzing the bids submitted, when applicable, superior design, technology, workmanship, materials, size of component parts, operating cost, warranty, service facility etc. will be considered in addition to price. It is Clermont County's intent to accept the bid for which a thorough analysis of the bids submitted, proves to be the most suitable for the intended use.

16. **Discounts:** Bidders may offer cash discounts for prompt payment of invoices, but their discounts will not be used in determining the final net prices bid. The County will endeavor to take advantage of such discounts if offered.

17. **Prices:** Unit price governs the award unless otherwise specified in the Request for Bid. When the award is based upon total prices, unit prices must be entered and extended by multiplying the unit price by the quantity, and totaled on all items. The Clermont Transportation Connection may elect to extend or may correct the extension in order to arrive at a correct extended figure.

18. **Cost Liability:** The County assumes no responsibility, and no liability, for costs incurred by the prospective bidders for the purposes of preparing and submitting bids.

19. **Declaration Regarding Material Assistance/Non-Assistance to a Terrorist Organization:** *All* bidders shall execute the form developed by the Ohio Department of Public Safety, Division of Homeland Security, in accordance with Section 2909.33 of the Ohio Revised Code and submit the completed form with their bid package in duplicate (one original and one copy with the copy stamped **"copy"**).

20. **Delivery:** Every effort shall be made by the Bidder awarded the contract to deliver items by or before the time designated in the contract. Any delinquency in such delivery without satisfactory written explanation directed to the Clermont County Commissioners may result in cancellation of the contract and substitution of other goods. The defaulting bidder shall be liable for any increased cost or expenses incurred as a result of such default.

21. **Performance:** The Board of County Commissioners reserves the right to require faithful performance of all things to be done under the contract and may require, as a condition of entering a purchase contract, lease, or lease with option to purchase, the bond provided for by Section 153.57 of the Revised Code, with good and sufficient surety in an amount not to exceed the amount of the bid.

22. **Materials:** Unless otherwise specified, all material shall be new and of the best grade in its particular line; all articles shall be complete and in first class condition; all articles shall include all applicable manufacturer's warranties. Such warranty shall be reflected in the bid documents. All work shall be done in the best and most skilled manner, exactly as specified or detailed, and shall be subject to the approval of Clermont County officials. When required in the specifications, bidders shall make available for inspection, a sample or similar model of the bid items prior to the award of the bid.

23. **Subcontracting:** It is to be understood that no part of this bid shall be assigned, transferred, conveyed, sublet, or otherwise disposed of, without the expressed written approval of the Board of County Commissioners.

24. **Recommendations:** Reference to a particular trade name, manufacturer's catalog or model number are made for descriptive purposes to guide the bidder in interpreting the requirements of the County. They should not be construed as excluding proposals on other types of materials, equipment and supplies. However, the bidder, if awarded a contract, will be required to furnish the particular item referred to in the specifications or description unless a departure or substitution is clearly noted and described in the bid proposal.

25. **Type of Contract:** Bidders should be aware that the contract is to be of a fixed cost nature. Cost plus/percentage of cost contracts will not be acceptable.

26. **Exemption:** Clermont County is exempt from payment of Federal Excise Tax, Transportation Tax and Ohio State Tax. Prices shall not include these taxes.

27. **Receipt and Opening of Bids:** Any bid may be withdrawn prior to the scheduled time and date for the bid opening.

28. **Obligations of Bidder:** At the time of opening of bids, it shall be presumed that each bidder has reviewed the specifications to clear up any questions. The failure of any bidder to examine any bid requirement shall in no way relieve the bidder of any obligation or condition of these contract documents.

29. **Bidder Qualifications:** The County reserves the right to conduct any investigations that it deems necessary to establish the responsibility, qualifications and financial ability of the bidders, proposed subcontractors and other persons and organizations to do the work in accordance with the Contract documents to the County's satisfaction within the prescribed time limits. The bidder shall furnish the County any and all such information, documents and data for this purpose that the County may request. The County also reserves the right to reject any bid should the information submitted by or the investigation of such bidder fails to satisfy the County that such bidder is sufficiently qualified to carry out any and all obligations of the contract.

30. **Statements of Conditionality:** Bids which contain statements of conditionality will not be accepted.

31. **Each bid shall include**: a letter of transmittal which bears the signature of the President, Vice-President, or any other Officer or Official as long as accompanied by affidavit of authority to bind the vendor.

All bidders are required to submit the following affidavits with their bid proposal:

- **a.** Non-Collusion Affidavit
- **b.** Affidavit Affirming Compliance with 5719.042 and 9.24 ORC.
- **c.** Affidavit Affirming Compliance with 3517.13 ORC.

These affidavits and specifications heretofore referenced shall be incorporated into and become a part of the Contract document.

Each bidder shall complete and submit the Required Contractor Information as specified in Article 4 of this bid packet.

32. **Property:** All materials and exhibits submitted in the bid response shall become the property of Clermont County and will not be returned to the bidder. All bids received constitute public information as a matter of statutory law and will be made available for public inspection and copying upon request by members of the public pursuant to the requirements of Section 149.43 of the Ohio Revised Code. Any portion of the bid that the bidder requires to be treated as confidential in nature must be marked to that effect and, provided that the information falls within an appropriate exemption enumerated under Section 149.43 of the Ohio Revised Code, that portion will not be considered public record. A blanket

indication of confidentiality or privilege will not be accepted and unless specific materials that fall within the appropriate statutory exemption are identified, the entire bid response will be treated as a public record.

33. **Assignability:** Any additional buses requested in this contract are assignable to any FTA funded transit agency sanctioned by this entity. In addition, any state or local agency or municipality sanctioned by this entity may purchase using the same terms and conditions of the contract issued. Additional options or equipment may be selected by each agency, at its own expense, following the award process. Any agency which is not subject to a purchase order from this entity must be invoiced directly by the supplier/contractor. Sanctioned agencies' participation is subject to a credit approval by the vendor, as this entity is in no way obligated by those agencies' financial commitments. Any outside agency choosing to utilize this clause does so at its own risk, by agreeing to the usage of this clause the using agency agrees to hold the Clermont County Board of Commissioners and/or the Clermont Transportation Connection harmless from any and all legal action pertaining to this contract.

34. **Options:** Contract is up to five (5) years. CTC will request firm fixed prices from the respondent awarded the contract for one (1) Heavy Duty Transit Bus as specified herein in Year 1 of the contract (FY2010, ending December 31st, 2010), with options to purchase up to five (5) additional vehicles in years 1 through 5. A total of twenty (26) vehicles may be purchased. Each "year" refers to an actual calendar year (January 1st to December 31st.)

SECTION 3: SOLICITATION PROVISIONS/REQUIRED CONTRACT CLAUSES

1.0 Contract Subject to Federal Financial Assistance/Application of Provisions and Clauses

Operation of the Clermont Transportation Connection is funded in part by grants from the Federal Transit Administration (FTA) of the United States Department of Transportation. The award of any contract is subject to the requirements of financial assistance contracts between the Clermont Transportation Connection (hereinafter referred to as CTC) and the U.S. Department of Transportation requiring compliance with purchasing procedures and standards as set forth in various federal statutes and regulations including OMB Circular A-102, 49 CFR Part 18, and FTA Circular 4220.1E. The Contractor is required to comply with all terms and conditions prescribed for third-party contracts by the U.S. Department of Transportation, Federal Transit Administration (FTA).

The following solicitation provisions and required contract clauses, except those identified below as not applicable to this solicitation and any resulting contract, will be incorporated by reference in any contract resulting from this Solicitation issued by CTC. These solicitation provisions and required contract clauses are in addition to other General Specifications, Special and Technical Specifications, Bidding or Proposal Procedures, and Bid or Proposal Forms set forth in other sections of this Solicitation which may also be incorporated by reference in any resulting contract. Some provisions and clauses require the bidder/proposer to execute and submit certain required certifications with the bid or proposal, which are included herein. Failure to execute and submit required certifications with the bid or proposal documents may render a bid or proposal non-responsive.

1.1 Non-Collusion; Affidavits

The bidder guarantees that the bid submitted is not a product of collusion with any other bidder and that it has not been communicated by the bidder to anyone not an employee or agent or surety of the bidder. Bidders are required to furnish a Federal Non-collusion Affidavit. Failure to submit the signed affidavit at the time of bid opening shall be grounds for disqualification of the bidder's bid.

1.2 Ineligible Bidders; Certification

The bidder certifies that it is not included in the U.S. Comptroller General's List of Ineligible Contractors Debarred for Violations of Labor Standards Provisions. Bidders are required to furnish a signed Ineligible Contractors Certificate. Failure to submit the certificate at the time of bid opening shall be grounds for the disqualification of the bidder's bid.

The following provision is applicable to any contract or subcontract in excess of $100,000:

1.3 Certification Regarding Debarment, Suspension, and Other Responsibility Matters Lower Tier Covered Transactions. (Third Party Contracts Over $100,000)

Instructions for Certification

1.3.1 By signing and submitting this bid or proposal, the prospective lower tier participant is providing the signed certification set out below.

1.3.2 The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, CTC may pursue available remedies, including suspension and/or debarment.

1.3.3 The prospective lower tier participant shall provide immediate written notice to CTC if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

1.3.4 The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "persons," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 [49 CFR Part 29]. You may contact CTC for assistance in obtaining a copy of those regulations.

1.3.5 The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized in writing by CTC.

1.3.6 The prospective lower tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction", without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

1.3.7 A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A

participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Non-procurement List issued by U.S. General Service Administration.

1.3.8 Nothing contained in the foregoing shall be construed to require establishment of system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

1.3.9 Except for transactions authorized under Paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to all remedies available to the Federal Government, CTC may pursue available remedies including suspension and/or debarment.

1.3.10 The certification language is as follows:

"Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction

The prospective lower tier participant certifies, by submission of this bid or proposal, that neither it nor its "principals" [as defined at 49 C.F.R. § 29.105(p)] is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

When the prospective lower tier participant is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this proposal."

The following provision is applicable to any contract or subcontract in excess of $100,000:

1.4 Lobbying

Contractors who apply or bid for an award of $100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying," included herein. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of

Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to CTC.

1.5 Interest of Members of, or Delegates to, Congress

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

1.6 Prohibited Interest

No member, officer, or employee of CTC or local public official during his tenure or one year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof.

1.7 Covenant Against Gratuities

The Contractor shall not offer or provide gifts, favors, entertainment or any other gratuities of monetary value to any official, employee, or agent of CTC during the period of this contract or for a period of one year thereafter.

1.8 Program Fraud and False or Fraudulent Statements and Related Acts

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. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

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.

1.9 Federal Changes

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Agreement (Form FTA MA (2) dated October, 1995) between Purchaser and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

EEO, CIVIL RIGHTS, DISADVANTAGED BUSINESS ENTERPRISE

1.10 Title VI, Civil Rights Act of 1964, Compliance

During the performance of this contract, the Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor"), agrees as follows:

1.10.1 Compliance with Regulations: The Contractor shall comply with the regulations relative to non-discrimination in federal programs of the Department of Transportation (hereinafter referred to as "Regulations"), which are incorporated by reference and made a part of this contract.

1.10.2 Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

1.10.3 Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract:

Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq, (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(a) Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(b) Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(c) The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

1.11 Disadvantaged Business Enterprise, 49 CFR Part 23

The Federal Fiscal Year goal has been set by the CTC in an attempt to match projected procurements with available qualified disadvantaged businesses. The CTC's goals for budgeted service contracts, bus parts, and other material and supplies for Disadvantaged Business Enterprises have been established by CTC as set forth by the Department of Transportation Regulations 49 C.F.R. Part 23, March 31, 1980, and amended by Section 106(c) of the Surface Transportation Assistance Act of 1987, and is considered pertinent to any contract resulting from this request for proposal.

If a specific DBE goal is assigned to this contract, it will be clearly stated in the Special Specifications, and if the contractor is found to have failed to exert sufficient, reasonable, and good faith efforts to involve DBE's in the work provided, CTC may declare the Contractor noncompliant and in breach of contract. If a goal is not stated in the Special Specifications, it will be understood that no specific goal is assigned to this contract.

1.11.1 Policy - It is the policy of the Department of Transportation and CTC that Disadvantaged Business Enterprises, as defined in 49 CFR Part 23, and as amended in Section 106(c) of the Surface Transportation and Uniform Relocation Assistance Act of 1987, shall have the maximum opportunity to participate in the performance of Contract financed in whole or in part with federal funds under this Agreement. Consequently, the DBE requirements of 49 CFR Part 23 and Section 106(c) of the STURAA of 1987, apply to this Contract.

The Contractor agrees to ensure that DBEs as defined in 49 CFR Part 23 and Section 106(c) of the STURAA of 1987, have the maximum opportunity to participate in the whole or in part with federal funds provided under this Agreement. In this regard, the Contractor shall take all necessary and reasonable steps in accordance with the regulations to ensure that DBEs have the maximum opportunity to compete for and perform subcontracts. The Contractor shall not discriminate on the basis of race, color, national origin, religion, sex, age or physical handicap in the award and performance of subcontracts.

It is further the policy of CTC to promote the development and increase the participation of businesses owned and controlled by disadvantaged. DBE involvement in all phases of CTC's procurement activities is encouraged.

1.11.2 DBE obligation - The Contractor and its subcontractors agree to ensure that disadvantaged businesses have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds provided under the Agreement. In that regard, all Contractors and subcontractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 as amended, to ensure

that minority business enterprises have the maximum opportunity to compete for and perform contracts.

1.11.3 Where the Contractor is found to have failed to exert sufficient reasonable and good faith efforts to involve DBE's in the work provided, CTC may declare the contractor noncompliant and in breach of contract.

1.11.4 The Contractor will keep records and documents for a reasonable time following performance of this contract to indicate compliance with CTC's DBE program. These records and documents will be made available at reasonable times and places for inspection by any authorized representative of CTC and will be submitted to CTC upon request.

1.11.5 CTC will provide affirmative assistance as may be reasonable and necessary to assist the prime contractor in implementing their programs for DBE participation.

The assistance may include the following upon request:

* Identification of qualified DBE
* Available listing of Minority Assistance Agencies
* Holding bid conferences to emphasize requirements

DBE Program Definitions, as used in the contract:

(a) Disadvantaged business "means a small business concern":

i. Which is at least 51 percent owned by one or more socially and economically disadvantaged individuals, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

ii. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

or

iii. Which is at least 51 percent owned by one or more women individuals, or in the case of any publicly owned business, at least 51% of the stock of which is owned by one or more women individuals; and

iv. Whose management and daily business operations are controlled by one or more women individuals who own it.

(b) "Small business concern" means a small business as defined by Section 3 of the Small Business Act and Appendix B - (Section 106(c)) Determinations of Business Size.

(c) "Socially and economically disadvantaged individuals" means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and States (or lawfully admitted permanent residents) and who are black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans, or women, and any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to section 8(a) of the Small Business Act.

i. "Black Americans", which includes persons having origins in any of the Black racial groups of Africa;

ii. "Hispanic Americans", which includes persons of Mexican, Puerto Rican, Cuba, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

iii. "Native Americans', which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

iv. “Asian-Pacific Americans", which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of Pacific, and the Northern Marianas;

v. "Asian-Indian Americans", which includes persons whose origins are from India, Pakistan, and Bangladesh.

1.12 Access Requirements for Individuals with Disabilities

The CTC agrees to comply with the requirements of 49 U.S.C. § 5301(d) which states the Federal policy that the elderly and persons with disabilities have the same right as other persons to use mass transportation service and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement that policy. CTC also agrees to comply with all applicable requirements of section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, which prohibits discrimination on the basis of handicaps, and with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 *et seq*., which requires that accessible facilities and services be made available to persons with disabilities, including any subsequent amendments thereto. In addition, CTC agrees to comply with all applicable requirements of the following regulations and any subsequent amendments thereto:

(1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37;

(2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27;

(3) Joint U.S. Architectural and Transportation Barriers Compliance Board/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38;
(4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35;
(5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36;
(6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;
(7) U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;
(8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F; and
(9) FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. Part 609; and
(10) Any implementing requirements FTA may issue.

LABOR PROVISIONS

1.13 Contract Work Hours and Safety Standards Act (NOT APPLICABLE)

1.14 Davis-Bacon Act (29CFR Section 5.5) (NOT APPLICABLE)

ENVIRONMENTAL, RESOURCE, ENERGY PROTECTION, CONSERVATION, AND SAFETY REQUIREMENTS

1.15 Energy Conservation

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

The following clause applies to any contract or subcontract in excess of $100,000:

1.16 Clean Air

The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the Purchaser and

understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

The following clause applies to any contract or subcontract in excess of $100,000:

1.17 Clean Water

The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

1.18 Air Pollution, 40 CFR Parts 84, 85, 86, and 600, Vehicle Purchases

In submitting its bid and executing a contract, Contractor assures that facilities or equipment (including motor vehicles) furnished, constructed or improved under the contract are or will be designed and equipped to limit air pollution as provided in accordance with EPA regulations as contained in 40 CFR Parts 84, 85, and 86 (Control of Air Pollution from Motor Vehicles and Engines) and 40 CFR Part 600 (Fuel Economy of Motor Vehicles) and all other applicable standards. For vehicle purchases the successful bidder may be required to submit Certification to CTC that the governing air pollution criteria has been met. This evidence and certification will be retained by CTC.

1.19 Federal Motor Vehicle Safety Standards (FMVSS), 49 CFR Part 500, Vehicle Purchases

Contractor (whether manufacturer or dealer) certifies that the vehicles to be supplied under the contract shall conform to all applicable Federal Motor Vehicle Safety Standards of the U.S. Department of Transportation, National Highway Traffic Safety Administration, and are certified by installation of the required certification plate.

1.20 New Bus Testing, 49 CFR Part 655, Bus Purchases

Contractor will comply with the regulations pertinent to New Vehicle Testing Requirements (49 CFR 655). New models and modified vehicles (as defined by the regulations) shall be certified to have been tested in accordance with the applicable regulations. If the vehicle is a model, which is not required to be tested, the contractor shall so certify. Bidders not certifying compliance with this requirement may be considered non-responsive. Bidders will be required to submit test results as a part of their bid package, if available at the time bid documents are submitted. Final test results shall be required prior to award of a contract.

1.21 Recycled Products

The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

1.22 Seismic Safety Requirements (NOT APPLICABLE)

OTHER STATUTORY REQUIREMENTS

1.23 Access to Records and Reports

1.23.1 Where the Purchaser is not a State but a local government and is the FTA Recipient or a sub grantee of the FTA Recipient in accordance with 49 C. F. R. 18.36(i), the Contractor agrees to provide the Purchaser, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C. F. R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.

1.23.2 Where the Purchaser is a State and is the FTA Recipient or a sub grantee of the FTA Recipient in accordance with 49 C.F.R. 633.17, Contractor agrees to provide the Purchaser, the FTA Administrator or his authorized representatives, including any PMO Contractor, access to the Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311. By

definition, a major capital project excludes contracts of less than the simplified acquisition threshold currently set at $100,000.

1.23.4 Where the Purchaser enters into a negotiated contract for other than a small purchase or under the simplified acquisition threshold and is an institution of higher education, a hospital or other non-profit organization and is the FTA Recipient or a sub grantee of the FTA Recipient in accordance with 49 C.F.R. 19.48, Contractor agrees to provide the Purchaser, FTA Administrator, the Comptroller General of the United States or any of their duly authorized representatives with access to any books, documents, papers and record of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions.

1.23.5 Where any Purchaser which is the FTA Recipient or a sub grantee of the FTA Recipient in accordance with 49 U.S.C. 5325(a) enters into a contract for a capital project or improvement (defined at 49 U.S.C. 5302(a)1) through other than competitive bidding, the Contractor shall make available records related to the contract to the Purchaser, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.

1.23.6 The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

1.23.7 The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

1.24 Buy America Provision:

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 CFR Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 CFR 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, microcomputer equipment, software, and

small purchases (currently less than $100,000) made with capital, operating, or planning funds. Separate requirements for rolling stock are set out at 5323(j)(2)(C) and 49 CFR 661.11. Rolling stock not subject to a general waiver must be manufactured in the United States and have a 60 percent domestic content.

A bidder or offeror must submit to CTC the appropriate Buy America certification (Buses, Rolling Stock or Related Equipment) with all bids on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.

1.25 Cargo Preference: Use of United States Flag Vessels, 46 CFR, Part 381

The contractor agrees:

1.25.1 To use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;

1.25.2 To furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of lading 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 CTC (through the contractor in the case of a subcontractor's bill-of-lading.)

1.25.3 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.

1.26 "Fly America" Requirements

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and sub-recipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or

property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

1.27 Patent Rights (NOT APPLICABLE)

1.28 Rights in Data and Copyrights (NOT APPLCABLE)

1.29 Privacy (NOT APPLCABLE)

1.29.A **PROTEST PROCEDURES**

1.29.1 General - Protests may be made by prospective bidders or proposers whose direct economic interest would be affected by award of a contract or by failure to award a contract. CTC will consider all protests requested in a timely manner regarding the award of a contract, whether submitted before or after an award. All protests are to be submitted in writing to: Clermont Transportation Connection, 4003 Filager Rd., Batavia, Ohio, 45103. Protest submissions should be concise, logically arranged, and clearly state the grounds for protest. A protest must include at least the following information:

(a) name, address, and telephone number of protestor,

(b) identification of contract solicitation number,

(c) a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents, and

(d) a statement as to what relief is requested.

Protests must be submitted to CTC in accordance with these procedures and time requirements, must be complete and contain all issues that the protestor believes relevant.

In the procedures outlined below, the Director is considered to be the Contracting Officer.

1.29.2 Protests Before Bid Opening - Bid protests alleging restrictive specifications or improprieties which are apparent prior to bid opening or

receipt of proposals must be submitted in writing to the Contracting Officer at the address above and must be received at least seven (7) days prior to bid opening or closing date for receipt of bids or proposals. If the written protest is not received by the time specified, bids or proposals may be received and award made in the normal manner unless the Contracting Officer determines that remedial action is required. Oral protests not followed up by a written protest will be disregarded. The Contracting Officer may request additional information from the appealing party and information or response from other bidders, which shall be submitted to the Contracting Officer not less than ten (10) days after the date of CTC's request. So far as practicable, appeals will be decided based on the written appeal, information and written response submitted by the appealing party and other bidders. In failure of any party to timely respond to a request for information, it may be deemed by CTC that such party does not desire to participate in the proceeding, does not contest the matter, or does not desire to submit a response, and in such a case, the protest will proceed and will not be delayed due to the lack of a response. Upon receipt and review of written submissions and any independent evaluation deemed appropriate by CTC, the Contracting Officer shall either (a) render a decision, or (b) at the sole election of the Contracting Officer, conduct an informal hearing at which the interested parties will be afforded opportunity to present their respective positions and facts, documents, justification, and technical information in support thereof. Parties may, but are not required to, be represented by counsel at the informal hearing, which will not be subject to formal rules of evidence or procedures. Following the informal hearing, if one is held, the Contracting Officer will render a decision, which shall be final, and notify all interested parties thereof in writing but no later than ten (10) days from the date of informal hearing.

1.29.3 Protests After Bid Opening/Prior to Award - Bid protests against the making of an award by the CTC must be submitted in writing to the Contracting Officer and received within seven (7) days of the bid opening by the CTC. Notice of the protest and the basis therefore will be given to all bidders or proposers. In addition, when a protest against the making of an award by the CTC is received and it is determined to withhold the award pending disposition of the protest, the bidders or proposers whose bids or proposals might become eligible for award shall be requested, before expiration of the time for acceptance, to extend or to withdraw the bid. Where a written protest against the making of an award is received in the time period specified, award will not be made prior to seven (7) days after resolution of the protest unless CTC determines that:

(a) the items to be purchased are urgently required

(b) delivery or performance will be unduly delayed by failure to make award promptly, or

(c) failure to make award will otherwise cause undue harm to CTC or the federal government.

1.29.4 Protests After Award - In instances where the award has been made, the Contractor shall be furnished with the notice of protest and the basis therefore. If the contractor has not executed the contract as of the date the protest is received by CTC, the execution of the contract will not be made prior to seven (7) days after resolution of the protest unless CTC determines that:

(a) the items to be purchased are urgently required

(b) delivery or performance will be unduly delayed by failure to make award promptly, or

(c) failure to make award will otherwise cause undue harm to CTC or the federal government.

1.29.5 Protests to Federal Transit Administration (FTA) - Under certain limited circumstances, an interested party may protest to the FTA the award of a contract pursuant to an FTA grant. FTA's review of any such protest will be limited to:

(a) alleged failure by CTC to have written protest procedures or alleged failure to follow such procedures, or

(b) alleged violations of specific federal requirement that provides an applicable complaint procedure shall be submitted and processed in accordance with that federal regulation.

Protestors shall file a protest with FTA not later than five (5) working days after a final decision of CTC's Contracting Officer is rendered under the CTC protest procedure. In instances where the protestor alleges that CTC failed to make a final determination on the protest, the protestor shall file a complaint with FTA no later than five (5) federal working days after the protestor knew or should have known of CTC's failure to render a final determination in the protest.

1.29.6 Submission of Protest to FTA - Protests submitted to FTA should be submitted to the FTA Region 5 Office in Chicago, Illinois with a concurrent copy to CTC. The protest filed with FTA shall:

(a) include the name and address of the protestor

(b) identify the CTC project number and the number of the contract solicitation

(c) contain a statement of the grounds for protest and any supporting documentation. This should detail the alleged failure to follow CTC's protest procedures, or the alleged failure to have procedures, and be fully supported to the extent possible

(d) include a copy of the local protest filed with CTC and a copy of the CTC decision, if any.

1.30 Notice of Federal Changes

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Agreement (Form FTA MA (2) dated October, 1995) between Purchaser and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

1.31 Compliance with Laws/Permits and Licenses

Contractor will give all notices and comply with all federal, State, County, and local laws, ordinances, rules, regulations, standards, and order of any public authority bearing on the performance of the contract, or concerning the production of goods there under, including, but not limited to, the laws referred to in these provisions of the contract and the other contract documents. If the contract documents are at variance therewith in any respect, any necessary changes shall be adjusted by appropriate modification. Omission of any applicable laws, ordinances, rules, regulations, standards, or orders by CTC in the contract documents shall be construed as an oversight and shall not relieve the Contractor from his obligations to meet such fully and completely. Upon request, the Contractor shall furnish to CTC certificates of compliance with all such laws, orders and regulations. The Contractor shall be responsible for obtaining all necessary permits and licenses required for performance under the contract.

Applicable provisions of all federal, State, County, and local laws, and of all ordinances, rules, and regulations shall govern any and all claims and disputes which may arise between person(s) submitting a bid response hereto and CTC by and through its officers, employees, and authorized representatives, or any other persons, natural and otherwise, and lack of knowledge by any Contractor shall not constitute a cognizable defense against the legal effect thereof.

1.32 Records Retention/Audit and Inspection of Records

1.32.1 The Contractor shall permit the authorized representatives of CTC, the U.S. Department of Transportation and the Comptroller General of the United States to inspect and audit all data and records of the Contractor relating to its performance under the contract until the expiration of three years after final payment under this contract.

1.32.2 The Contractor further agrees to include in all subcontracts hereunder a provision to the effect that the subcontractor agrees that CTC, the U.S. Department of Transportation and the Comptroller General of the United States or any of their duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any books, documents, papers, and records of the subcontractor directly pertinent to this contract. The term "subcontract" as used in this clause excludes (1) purchase orders not exceeding $10,000 and (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

1.32.3 The periods of access and examination described above, for records which relate to (1) appeals under the dispute clause of this contract, (2) litigation or the settlement of claims arising out of the performance of this contract, or (3) costs and expenses of this contract to which an exception has been taken by the U.S. Comptroller General or any of his duly authorized representatives, shall continue until such appeals, litigation, claims or exceptions have been disposed of.

1.33 Contract Changes

Any proposed change in this contract shall be submitted to CTC for its prior approval and CTC will make changes only by written contract modification.

CTC may, at any time, by a written order, and without notice to sureties, make changes, within the general scope of this contract, in any one or more of the following: (1) drawings, designs or specifications; (2) method of shipment or packing; and (3) place of delivery. If any such change causes an increase or decrease in the cost of, or the time required for the performance of the work under this contract, whether changed or not changed by any such order, an equitable adjustment shall be made in the contract price or delivery schedule, or both, and the contract shall be modified accordingly. Any claim for adjustment under this clause shall be asserted within 30 days from the date of receipt by the Contractor of the notification of change: Provided, however, that CTC, if it decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to final payment under this contract. Failure to agree to any adjustment shall be a dispute concerning a question of fact; however, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

1.34 No Government Obligation to Third Parties

The Purchaser and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

1.35 Incorporation Of Federal Transit Administration (FTA) Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1E are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any State requests, which would cause the State to be in violation of the FTA terms and conditions.

SECTION 4: REQUIRED AFFIDAVITS, FORMS, & CERTIFICATIONS

Required Form i.

FEDERAL NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

STATE OF _____)
COUNTY OF _____)

_____, being first duly sworn, deposes and says that:

1. They are _____ of _____
(Owner, partner, officer, representative or agent)
the Bidder that has submitted the attached Bid:

2. They are fully informed respecting the preparation and contents of the attached bid and of all pertinent circumstances respecting such Bid:

3. Such Bid is genuine and is not a collusive or sham Bid:

4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this Affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder or to fix any overhead, profit or cost element of the Bid price or Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Board of County Commissioners of Clermont County or any person interested in the proposed Contract: and

5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this Affidavit.

Signature

Title

Sworn to before me and subscribed in my presence this ____day of _____, 20____.

Notary Public
My Commission expires: ____/_____/20____

Required Form ii.

INELIGIBLE CONTRACTORS CERTIFICATE

"The _____ (name of the third party contractor) hereby certifies that it IS / IS NOT (circle one) included on the U.S. Comptroller General's Consolidated List of Persons or Firms Currently Debarred for Violations for Various Public Contracts Incorporating Labor Standard Provisions.

COMPANY NAME: _____

AUTHORIZED OFFICIAL: _____

TITLE: _____

SIGNATURE:_____

DATE:_____

Required Form iii.

CERTIFICATION REGARDING LOBBYING PURSUANT TO 49 CFR PART 20

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq* .)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure. [Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq., apply* to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized Official

_____ Date

Required Form iv.

AFFIDAVIT IN COMPLIANCE WITH SECTIONS 9.24 AND 5719.042 OF THE OHIO REVISED CODE

STATE OF _____

SS:

COUNTY OF _____

Personally appeared before me the undersigned, a bidder in a competitive bidding

for_____
(Name of Firm)

for a _____ contract let by the County of Clermont, who, being
(Type of Product or Service)

duly cautioned and sworn, makes the following statement with respect to the personal property taxes on the general tax list of personal property of Clermont County, Ohio:

1. That the undersigned at the time of making this bid on the aforementioned contract was not charged with any delinquent personal property taxes on the general tax list of personal property of Clermont County.

2. That this statement is made in compliance with Section 5719.042 to be incorporated into the contract between the parties as provided in that Section of the Ohio Revised Code.

3. That pursuant to §9.24 of the Ohio Revised Code, if the project for which this bid is submitted has been identified as being funded in whole or in part with funds from the State of Ohio, the affiant further certifies that the bidder, if an individual, or if a corporation, any principal owning more than 10% equitable interest in the corporation, does not have a finding for recovery issued by the Auditor of State which remains unresolved as defined in §9.24 ORC.

Signature:_____
Title: _____

Subscribed and sworn before me this _____ day of _____, 20_____

Notary Public_____,
Printed Name of Notary:_____
My Commission expires:_____.

Required Form v.

AFFIDAVIT IN COMPLIANCE WITH SECTION 3517.13 OF THE OHIO REVISED CODE

STATE OF _____ }
}
COUNTY OF _____ } SS:

Personally appeared before me the undersigned, as an individual or as a representative of

_____ for a contract for _____
(*Name of Entity)* (*Type of Product or Service)*

to be let by Clermont County, Ohio, who, being duly cautioned and sworn, makes the following statement with respect to prohibited activities constituting a conflict of interest or other violations under Ohio Revised Code Section 3517.13 (campaign contributions and reporting) and further states that the undersigned has the authority to make the following representation on behalf of himself or herself or of the business entity:

1. That none of the following has **individually** made within the previous twenty-four months
and that, if awarded a contract for the purchase of goods or services with a cost aggregating in excess of $10,000 in a calendar year, none of the following **individually** will make, beginning on the date the contract is awarded and extending until one year following the conclusion of the contract, as an individual, one or more campaign contributions totaling in excess of $1,000, to any member of the Clermont County Board of Commissioners or their individual campaign committees, or if the contracting authority is another elected official of Clermont County, to that official or their individual campaign committee:

a. myself;
b. any partner or owner or shareholder of the partnership (if applicable);
c. any owner of more than 20% of the corporation or business trust (if applicable);
d. each spouse of any person identified in (a) through (c) of this section;
e. each child seven years of age to seventeen years of age of any person identified in divisions (a) through (c) of this section (only applicable to contributions made on or after January 1, 2009).

2. That none of the following have **collectively** made since January 1, 2009, and that, if awarded a contract for the purchase of goods and services with a cost aggregating in excess of $10,000 in a calendar year, none of the following **collectively** will make, beginning on the date the contract is awarded and extending until one year following the conclusion of the contract, one or more campaign contributions totaling in excess of $2,000, to any member of the Clermont County Board of Commissioners or their individual campaign committees, or if the contracting authority is another elected official of Clermont County, to that official or their individual campaign committee:

a. myself;
b. any partner or owner or shareholder of the partnership (if applicable);
c. any owner of more than 20% of the corporation or business trust (if applicable);
d. each spouse of any person identified in (a) through (c) of this section;
e. each child seven years of age to seventeen years of age of any person identified in divisions (a) through (c) of this section.

3. That this representation is made to induce the County to enter into a contractual relationship with the Contractor, and with the knowledge that County officials will rely on the authenticity of statements made herein in awarding and administering such contracts.

Signature_____

Title:_____

Sworn to before me and subscribed in my presence this _____day of_____, 20___.

Notary Public _____

My Commission Expires: _____

Required Form vi.

BUY AMERICA CERTIFICATION
CERTIFICATION FOR PROCUREMENT OF BUSES, ROLLING STOCK OR ASSOCIATED EQUIPMENT

Certification Requirement for Procurement of Buses, Rolling Stock and Associated Equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2C)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(2C) and the applicable regulations in 49 CFR Part 661.

Date _____

Signature_____

Title: _____

Company Name _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2C)

"OR"

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2C), but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(B) or (j)(2)(D) and the regulations in 49 CFR 661.7.

Date _____

Signature _____

Title _____

Company Name _____

Required Form vii.

TRANSIT VEHICLE MANUFACTURERS CERTIFICATION OF COMPLIANCE WITH 49 CFR PART 26 DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

This procurement is subject to the provisions of Section26.49 of 49 CFR Part 26, subparts (b) and (c). Accordingly, as a condition of permission to bid, the following certification must be completed and submitted with the bid along with a copy of Transit Vehicle Manufacturers (TVM) FFY 2009 Annual Overall Percentage Goal as submitted to the Federal Transit Administration. A bid which does not include the certification and a copy of the TVM goal will not be considered.

Transit Vehicle Manufacturer Certification

_____, a Transit Vehicle Manufacturer, hereby certifies that _____ (Name of Bidder) has complied with the requirements of Section26.49 of 49 CFR Part 26, subparts (b) and (c) addressing transit vehicle manufacturers by submitting its FFY 2009 TVM annual overall percentage DBE goal to the Federal Transit Administration, which has been approved or not disapproved by FTA.

The_____ (Name of Bidder) hereby certifies that the manufacturer of the transit _____ (Name of Manufacturer) vehicle to be supplied, _____ (Name of Bidder) has complied with the above-referenced requirements _____ (Name of Manufacturer) of 49 CFR Part 26.

_____Date:_____
Authorizing Official for Bidder

Typed Name: _____

Title: _____

Name of Firm:_____

Required Form viii.

FMVSS Affidavit of Compliance

AFFIDAVIT

Pursuant to Sections 663.41 and 663.43 of CFR chapter VI, I hereby certify that (Check A or B):

_____(A) All vehicles proposed in this bid will comply with all relevant Federal Motor Vehicle Safety Standards issued by the National Traffic Safety Administration in 49 CFR part 571 when deliver to the recipient agency.

_____(B) All vehicles proposed in this bid are not subject to the Federal Motor vehicle Safety Standards issued by the National Highway Traffic Safety Administration in 49 CFR part 571

_____ _____

Signature Title

_____

Company

Sworn to and subscribed before me this _____ day of _____, 20___.

Notary Public

(Seal) Commission Expires

_____,20_____.

Required Form ix.

FMVSS/Bus Testing Certification Vendor Pre-Award Self-Certification

The undersigned hereby certifies that the vehicle(s) provided in this contract meet all Applicable Federal Motor Vehicle Safety Standards and bus testing requirements. Additionally, a complete copy of the final bus testing results is included with this bid.

_____	_____
Signature	Title
_____	_____
Company	Date

Required Form x.

Ohio Department of Public Safety
Division of Homeland Security
http://www.homelandsecurity.ohio.gov

GOVERNMENT BUSINESS AND FUNDING CONTRACTS
In accordance with section 2909.33 of the Ohio Revised Code

DECLARATION REGARDING MATERIAL ASSISTANCE/NONASSISTANCE TO A TERRORIST ORGANIZATION

This form serves as a declaration of the provision of material assistance to a terrorist organization or organization that supports terrorism as identified by the U. S. Department of State Terrorist Exclusion List (see the Ohio Homeland Security Division website for a reference copy of the Terrorist Exclusion List).

Any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided. Failure to disclose the provision of material assistance to such an organization or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree.

For the purposes of this declaration, "material support or resources" means currency, payment instruments, other financial securities, funds, transfer of funds, and financial services that are in excess of one hundred dollars, as well as communications, lodging, training, safe houses, false documentation or identification, communications equipment, facilities, weapons, lethal substances, explosives, personnel, transportation, and other physical assets, except medicine or religious materials.

LAST NAME	FIRST NAME	MIDDLE INITIAL
HOME ADDRESS		
CITY / STATE / ZIP / COUNTY		
HOME PHONE	WORK PHONE	

COMPLETE THIS SECTION ONLY IF YOU ARE A COMPANY, BUSINESS OR ORGANIZATION

BUSINESS/ORGANIZATION NAME			
BUSINESS ADDRESS			
CITY	STATE	ZIP	COUNTY
PHONE NUMBER			

DECLARATION
In accordance with division (A) (2) (b) of section 2909.32 of the Ohio Revised Code

For each question, indicate either "yes" or "no" in the space provided. Responses must be truthful to the best of your knowledge.

1. Are you a member of an organization on the U.S. Department of State Terrorist Exclusion List?
   ☐ Yes ☐ No

2. Have you used any position of prominence you have with any country to persuade others to support an organization
   on the U.S. Department of State Terrorist Exclusion List?

☐ Yes ☐ No

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GOVERNMENT BUSINESS AND FUNDING CONTRACTS – CONTINUED

3. Have you knowingly solicited funds or other things of value for an organization on the U.S. Department of State
Terrorist Exclusion List?
☐ Yes ☐ No

4. Have you solicited any individual for membership in an organization on the U.S. Department of State Terrorist
Exclusion List?
☐ Yes ☐ No

5. Have you committed an act that you know, or reasonably should have known, affords "material support or resources"
to an organization on the U.S. Department of State Terrorist Exclusion List?
☐ Yes ☐ No

6. Have you hired or compensated a person you knew to be a member of an organization on the U.S. Department of
State Terrorist Exclusion List, or a person you knew to be engaged in planning, assisting, or carrying out an act of
terrorism?
☐ Yes ☐ No

In the event of a denial of a government contract or government funding due to a positive indication that material assistance has been provided to a terrorist organization, or an organization that supports terrorism as identified by the
U.S. Department of State Terrorist Exclusion List, a review of the denial may be requested. The request must be sent to the Ohio Department of Public Safety's Division of Homeland Security. The request forms and instructions for filing can be found on the Ohio Homeland Security Division website.

CERTIFICATION

I hereby certify that the answers I have made to all of the questions on this declaration are true to the best of my knowledge. I understand that if this declaration is not completed in its entirety, it will not be processed and I will be automatically disqualified. I understand that I am responsible for the correctness of this declaration. I understand that failure to disclose the provision of material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List, or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree. I understand that any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided by myself or my organization. If I am signing this on behalf of a company, business or organization, I hereby acknowledge that I have the authority to make this certification on behalf of the company, business or organization referenced on page 1 of this declaration.

X_____ _____

Signature Date

Required Form xi.

GUARANTY BOND
FOR COUNTY PURCHASES CLERMONT COUNTY, OHIO

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____as Principal, and _____, a corporation under the laws of the State of _____, having its principal place of business in the _____of _____, _____, as Surety, are held and firmly bound unto the Board of County Commissioners, Clermont County, Ohio hereinafter called the Obligee, in the penal sum of _____ DOLLARS, (not to exceed five percent (5%) of the **TOTAL** (all units), bid amount) lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED, sealed and dated this _____ day of_____, 20_____.

WHEREAS, the said Principal is herewith submitting its bid proposal for:_____

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that if the aforesaid Principal shall be awarded the contract upon said proposal and shall within the required number of days after the notice of such award enter into a contract in accordance with Principal's bid, then this obligation shall be null and void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee may legally contract with another party to perform the said work if the later amount be in excess of the former or, if a contract is not entered into with another bidder and the project is resubmitted for bidding then the Principal and Surety will be liable for the costs in connection with the resubmission of

printing new contract documents, required advertising, and printing and mailing notices to prospective bidders, whichever is less; but in no event shall the Surety's liability exceed the penal sum hereof.

IN WITNESS WHEREOF, this instrument is executed the _____ day of _____, 20___.

ATTEST:

_____
(Principal) Secretary)
(SEAL)

PRINCIPAL:

_____

By:_____

Title:_____

Address:_____

_____

ATTEST:

_____
(Surety) Secretary
(SEAL)

SURETY:

_____

By:_____
Attorney-in-Fact

Title:_____

Address:_____

_____

SURETY AGENT:

Agency Name_____

Address:_____
_____

Required Form xii.

American Recovery & Reinvestment Act/Jobs for Main St. Act
Project Employment Data

This project is funded by the American Recovery & Reinvestment Act (ARRA) of 2009 (Stimulus) or the Jobs for Main St. Act of 2010 (Stimulus Part 2), which requires the reporting of employment data which is funded by the ARRA/JFM. The following section must be completed for your bid to be accepted.

Number of Jobs Created: _____

Number of Jobs Saved/Maintained: _____

Total Job Hours Created: _____

Total Job Hours Saved/Maintained: _____

Total Payroll Amount Created: $_____

Total Payroll Amount Saved/Maintained: $_____

We realize this data is difficult to attain, please be as accurate as possible.

SECTION 5: TECHNICAL SPECIFICATIONS

Heavy Duty Transit Bus

General Requirements

Bidder shall submit documentation certifying that proposed vehicle meets all applicable FMVSS Regulations in effect on the date of manufacture. At a minimum the following standard shall be included in the certification:

FMVSS 207	FMVSS 210	FMVSS 302
FMVSS 208	FMVSS 220	
FMVSS 209	FMVSS 221	

Bidder shall certify compliance with Buy America regulations. Successful bidder must provide a list of vehicle components and sub-components with manufacturer and place of manufacture and cost or percentage of total vehicle cost for each component or sub-component. It is sufficient to list US made components or sub-components, the cost of which totals more than 60% of the total vehicle cost as required by Buy America regulations, rather than all vehicle components and sub-components. (Purchase Orders over $100,000).

Bidder shall submit with bid documentation showing compliance with 49 CFR 665, FTA Bus Testing regulation. Vehicle must be tested to show compliance with a 12 Year/500,000 Mile duty cycle life. **Test results documenting a 12 Year/500,000 Mile duty cycle life by the Federal Transit Administration test center in Altoona, Pennsylvania shall be submitted**. A vehicle that has not been Altoona Tested as a 12 year vehicle will not be compliant with this specification.

1.1 Vehicle Manufacturer must have ISO 9001 Certification. Proof or certification must be submitted with the RFB.

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

1.3 Note: Whenever a specific trade or product name is used within this specification, the following statement applies: "…or approved equal with essentially comparable standards of quality, design and performance." **All requests for approved equals must be approved by CTC prior to the bid opening. All requests for approved equals must be supported with detailed technical information**.

1.7 Contractor shall submit signed copies of all required Certificates and Assurances.

1. GENERAL

1.1. OVERALL REQUIREMENTS

1.1.1. DIMENSIONS

With the exceptions of exterior mirrors, marker and signal lights, bumpers, fender skirts, washers, wipers, ad frames and rubrail, the bus shall have the following overall dimensions at static conditions and design height.

1.1.1.1. Length Overall (minimum)……480”
1.1.1.2. Width, Exterior (maximum)……...102”
1.1.1.3. Height Overall (nominal)……...124”
1.1.1.4. GVWR (minimum)……..….39,000lbs
1.1.1.5. Wheelbase (maximum)…...……...250”

1.1.2. UNDERBODY CLEARANCE

The bus shall maintain the minimum clearance dimensions (with or without ramp):

1.1.2.1. Angle of Approach : 9º
1.1.2.2. Breakover Angle : 9.5º
1.1.2.3. Angle of Departure : 9º
1.1.2.4. Ground clearance: 10.5 in
1.1.2.5. Axle clearance : Including Axles, 6.7 in
1.1.2.6. Rear axle : 7.28 in (move vertically with the axles)

1.1.3. FLOOR HEIGHT

Height of the floor above the street shall be no more than 15 ½ inches measured at the centerline of the front, and rear doorway. The floor may be inclined along the longitudinal axis of the bus, and the incline shall be less than 2° off the horizontal except locally at the doors where 2^{o} slope toward the door is allowed. All floor measurements shall be with the bus at the design running height and on a level surface and with the standard 305 tires.

1.1.4. INTERIOR HEADROOM

1.1.4.1. Interior height, excluding the platforms and the elevated section : 94 in
1.1.4.2. The minimum height on the back podium is : 76 in
1.1.4.3. The minimum height on the back podium measured on the step to access to the back seats is : 74 in
1.1.4.4. Interior height in the driver's cab : 75 in
1.1.4.5. At the centerline of the window seats : 81.75 in `

1.1.5. **AISLE WIDTH**

In order to maximize passenger flow throughout the bus, the clear aisle width shall be 30 inches.

1.1.6. **WEIGHT**

Each vehicle, at a capacity load, shall not exceed the GVWR or maximum axle weights specified. In no case shall the front axle weight exceed 14,960 lbs and the rear 27 720 lbs. The GWVR shall not exceed 40,400 lbs.

1.1.7. **CAPACITY**

Vehicle shall have 2 ADA compliant wheelchair positions, the seating capacity shall be up to 38 passengers (min). Total passenger capacity (seated and standing) shall be up to 80 passengers.

1.2. SERVICE LIFE AND MAINTENANCE

1.2.1. **SERVICE LIFE**

The bus shall be designed to operate in transit service for at least 12 years or 500,000 miles. It shall be capable of operating at least 40,000 miles per year including the twelfth year.

1.2.2. **MAINTENANCE AND INSPECTION**

Scheduled maintenance tasks shall be related and shall be grouped in maximum mileage intervals. Routine scheduled maintenance actions, such as filter replacement and adjustments, shall not be required at intervals of less than 6,000 miles, except for engine oil/filter change intervals for severe duty, or as indicated from a regular oil analysis program and routine daily service performed during the fueling operations. Higher levels of scheduled maintenance tasks shall occur at even multiples of mileage for lower level tasks.

1.2.3. **ACCESSIBILITY**

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. As a goal, relative accessibility of components, measured in time required to gain access, shall be inversely proportional to frequency of maintenance and repair of the components.

1.2.4. **INTERCHANGEABILITY**

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. Any one component or unit used in the construction of these buses shall be an exact duplicate in design, manufacture, and assembly for each bus in each order group in this Contract.

1.2.5. **OPERATING ENVIRONMENT**

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

1.2.5.1. A block heater is required, and shall operate with standard 110volt power. The plug for this block heater shall be located at the front curbside and shall be easily accessible for daily use.

Speed, gradability, and acceleration performance requirements shall be met at, or corrected to, 77º F, 29.31 inches Hg, dry air per SAE J1995.

1.2.6. **NOISE**

1.2.6.1. **INTERIOR NOISE**

The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 80 dBA measured at the outside skin of the bus shall have a sound level of 65 dBA or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off. The bus-generated noise level experienced by a passenger at any seat location in the bus shall not exceed 80 dBA and the operator shall not experience a noise level of more than 75 DBA under the following test conditions. The bus shall be empty except for test personnel, not to exceed 4 persons, and the test equipment. All openings shall be closed and all accessories shall be operating during the test. The bus shall accelerate at full throttle from a standstill to 35 mph on level commercial asphalt or concrete pavement in an area free of large reflecting surfaces within 50 feet of the bus path. During the test, the ambient noise level in the test area shall be at least 10 DBA lower than the bus under test. Instrumentation and other general requirements shall conform to SAE Standard J366.

1.2.6.2. **EXTERIOR NOISE**

Airborne noise generated by the bus and measured from either side shall not exceed 80 dBA under full power acceleration when operated at or below 35 mph at curb weight and just prior to transmission upshift. The maximum noise level generated by the bus

pulling away from a stop at full power shall not exceed 80 dBA. The bus-generated noise at curb idle shall not exceed 65 dBA. All noise readings shall be taken 50 feet from and perpendicular to, the centerline of the bus with all accessories operating. Instrumentation, test sites, and other general requirements shall be in accordance with SAE Standard J366. The pull away test shall begin with the front bumper even with the microphone. The curb idle test shall be conducted with the rear bumper even with the microphone.

1.2.6.3. **FIRE SAFETY**

The bus shall be designed and manufactured in accordance with all applicable fire safety and smoke emission regulations. These provisions shall include the use of fire-retardant/low-smoke materials, fire detection systems, 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 grabrails, switch knobs and small light lenses, shall be exempt from this requirement.

1.2.6.3.1. Fire detection systems shall be provided.

1.2.6.4. **ELDERLY AND DISABLED PASSENGERS**

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

1.2.6.5. **RESPECT FOR THE ENVIRONMENT**

In the design and manufacture of the bus the Contractor shall make every effort to reduce the amount of potentially hazardous waste generated by the Clermont Transportation Connection (CTC) when maintaining the bus in accordance with the procedures contained in the manufacturer's maintenance manuals. The manufacturer shall use, whenever possible, low mercury fluorescent lighting tubes, PCB free ballast units, 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.

2. PROPULSION SYSTEM

2.1. VEHICLE PERFORMANCE

2.1.1. **POWER REQUIREMENTS**

Propulsion system and drive train shall provide power to enable the bus to meet the defined acceleration, top speed, and gradability requirements, and operate all propulsion-driven accessories. Power requirements are based on heavy, heavy-duty diesel (HHDD) Cummins ISL 280 hp engine certified for use in all 50 states.

2.1.2. **TOP SPEED**

The bus shall be capable of achieving a speed of 76 m.p.h. but shall be governed at a top speed of 72 m.p.h. on a straight, level road at GVWR with all accessories operating.

2.1.3. **GRADABILITY**

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

2.1.4. **ACCELERATION**

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

MAXIMUM IDLE START ACCELERATION TIMES ON A LEVEL SURFACE

SPEED (MPH)	**TIME** (SEC)
10	5.0
20	10.8
30	20.0

2.1.5. **OPERATING RANGE**

The operating range of the coach when run on the transit coach duty cycle shall be at least 300 miles.

2.1.6. **FUEL ECONOMY**

The engine shall be tuned when delivered to provide optimized performance as specified above, including fuel economy. All related components and configuration that affect fuel economy, such as, fan control/operation, transmission, axle ratio, etc., shall be selected accordingly.

2.2. **DRIVETRAIN**

2.2.1. POWER PLANT

2.2.1.1. ENGINE

2.2.1.1.1. The vehicle shall have a HHDD Cummins ISL 280 hp engine

2.2.1.1.2. The engine shall be designed to operate for not less than 300,000 miles without major failure or significant deterioration.

2.2.1.1.3. Components of the fuel injector and/or control system shall be designed to operate for not less than 150,000 miles without replacement or major service.

2.2.1.1.4. The engine shall meet all requirements when operating on Nos. 1 or 2 diesel fuel, as certified by the engine. .

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

2.2.1.1.6. In order to avoid potential warranty disputes during the engine warranty period, initial performance settings shall only be changed with the authorization from the bus and engine manufacturers.

2.2.1.1.7. The engine control system shall have onboard diagnostic capabilities able to monitor vital engine functions, store and time stamp out of parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in operator’s area and near or inside engine compartment. The onboard diagnostic system shall inform the operator via visual and/or audible alarms when out-of-parameter conditions exist for vital engine functions. Conditions that require an operator alarm are identified in this document. Data communication requirements for the on-board Drivetrain diagnostic system are identified in Section document aswell.

2.2.1.1.8. The engine starter shall be Delco Remy 41MT and protected by an interlock that prevents its engagement when the engine is running. The engine block heater referenced previously in this document shall be of the type recommended by the engine manufacturer.

2.2.1.1.9. The engine shall be equipped with an operator-controlled fast idle device. The fast idle control shall be a two-way toggle mounted on the dash or side console and shall activate only with the transmission in neutral and the parking brake applied. This device may be used to help meet the requirements of bus cool down referenced in this document.

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

2.2.1.1.11. Automatic shutdown shall only occur when parameters established for the functions below are exceeded:

2.2.1.1.11.1. Coolant Level
2.2.1.1.11.2. Coolant Temperature
2.2.1.1.11.3. Oil Pressure
2.2.1.1.11.4. Oil Temperature

2.2.1.1.12. A control shall be available to the operator, to allow temporary over idle (30-45 seconds) of the engine protection/shutdown system if engine power is required to move the bus in emergency conditions.

2.2.1.2. **COOLING SYSTEMS**

The cooling systems shall be of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufacturers' cooling system requirements. The cooling system fan/fans control should sense the temperatures of the operating fluids and the intake air and if either is above safe operating conditions the cooling fan should be engaged. The fan control system shall be designed with a fail-safe mode of "fan on." The cooling system in new condition shall have an ambient capacity of at least 106° F with water as coolant and sea level operation.

2.2.1.2.1. **ENGINE COOLING**

The engine shall be cooled by a water-based, pressure type, cooling system that does not permit boiling or coolant loss during the operations described above. Engine thermostats shall be easily accessible for replacement. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and water booster pumps. **The water boost pump shall be a Webasto U4814 magnetically coupled, brushless design.** All low points in the water-based cooling system shall be equipped with drain cocks. Air vent valves shall be fitted at high points in the cooling system unless it can be demonstrated that the system is self-purging.

2.2.1.2.2. Low coolant level is indicated through the information display located in the engine compartment. A spring-loaded, push button type valve to safely release pressure or vacuum in the cooling system shall be provided with both it and the water filler no more than 60 inches above the ground and both shall be accessible through the engine compartment access door.

2.2.1.2.3. The radiator, and charge air cooler if integrated, shall be of durable corrosion-resistant construction with plastic crimped non -removable tanks (truck industry standard). The radiator shall be mounted as high off the ground as possible in order to provide clean air for cooling and to avoid ingesting road debris. The radiator position shall allow access to both sides of the engine without removing any parts.

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

2.2.1.2.5. The radiator and charge air cooler shall be designed to withstand thermal fatigue and vibration associated with the installed configuration.

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

2.2.1.2.7. Dual fans shall be provided on radiator assembly and controlled by a proportional valve. Speeds shall be adjusted according to the temperature coolant and the temperature turbocharged air.

2.2.1.2.8. **CHARGE AIR COOLING**

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

2.2.1.2.9. **TRANSMISSION COOLING**

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

2.2.1.3. **TRANSMISSION**

2.2.1.3.1. The transmission shall be an Allison B400R equipped with Allison Transmission Electronic Control. Gross input power, gross input torque and rated input speed shall be compatible with the engine.

2.2.1.3.2. A mechanic shall be able to remove and replace the transmission assembly for service in less than 9 total combined man-hours.

2.2.1.3.3. The transmission shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major service.

2.2.1.3.4. The electronic controls shall be capable of transmitting and receiving electronic inputs and data from other Drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic Drivetrain components and other vehicle systems shall be made using the communications networks specified in this document.

2.2.1.3.5. Electronic controls shall be compatible with either 12 or 24 volt power distribution, provide consistent shift quality, and compensate for changing conditions such as variations in vehicle weight and engine power. A brake pedal application of 15 to 20 psi shall be required by the operator to engage forward or reverse range from the

neutral position to prevent sudden acceleration of the bus from a parked position.

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

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

2.2.1.3.8. The transmission shall have an auto neutral feature that shall cause it to automatically and immediately shift to "Neutral" whenever the transmission is left in gear and the parking brake is applied. This system shall also automatically shift the transmission to "Neutral," after a 5-minute delay, whenever the entrance door brake interlock is applied.

2.2.1.3.9. **RETARDER**

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

2.2.1.3.10. The retarder shall be configured to be activated with the brake pedal depressed.

2.2.1.3.11. **JERK**

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

2.2.1.4. **MOUNTING**

The power plant shall be centrally mounted in a compartment in the rear of the bus. All power plant mounting shall be mechanically isolated to

minimize transfer of vibration to the body structure as defined in this document. Mounts shall control movement of the power plant so as not to affect performance of belt driven accessories or cause strain in piping and wiring connections to the power plant.

2.2.1.5. **SERVICE**

2.2.1.5.1. The power plant shall be arranged so that accessibility for all routine maintenance is assured. No special tools, other than dollies and hoists, shall be required to remove the power plant. Two mechanics shall be able to remove and replace the engine and transmission assembly in less than 12 total combined man-hours. The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories, and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal.

2.2.1.5.2. An engine oil pressure gauge and coolant temperature gauge shall be provided in the engine compartment. These gauges shall be easily read during service and mounted in an area where they shall not be damaged during minor or major repairs.

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

2.2.1.5.4. The engine and transmission shall be equipped with sufficient heavy-duty fuel and a Cummins LF9009 oil filter for efficient operation and to protect the engine and transmission between scheduled filter changes.

2.2.1.5.5. All filters shall be easily accessible and the filter bases shall be plumbed to assure correct reinstallation. Fuel and oil lines shall meet the requirements of this document.

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

2.2.1.5.7. A Donaldson air cleaner with a dry filter element and a graduated air filter restriction indicator shall be provided. The filter shall be removable by a mechanic in 10 minutes or less. The location of the air intake system shall be designed to minimize the entry of dust and debris and maximize the life of the air filter. The engine air duct shall be designed to minimize the entry of water into the air intake system.

Drainage provisions shall be included to allow any water/moisture to drain prior to entry into air filter.

2.2.1.6. **ACCESSORIES**

Engine-driven accessories shall be mounted for quick removal and repair. Accessory drive systems shall operate without unscheduled adjustment for not less than 50,000 miles on the design operating profile. These accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of idle operation and low route speed portion of the design operating profile. Belt guards are hinged and secured with stainless steel spring latch and easily removable.

2.2.1.7. **HYDRAULIC SYSTEMS**

2.2.1.7.1. Any accessory may be driven hydraulically. The hydraulic system shall demonstrate a mean time between repairs in excess of 50,000 miles. Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major coach systems.

2.2.1.7.2. 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.

2.2.1.7.3. 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.

2.2.1.7.4. A low fluid level sensor shall be included. Visual indicator shall be located on the dash. The sensor shall be related to the stop engine emergency system.

2.2.1.8. **FLUID LINES, FITTINGS AND CLAMPS, AND CHARGE AIR PIPING**

2.2.1.8.1. All fluid lines and air piping shall be rigidly supported to prevent chafing damage, 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.

2.2.1.8.2. Flexible fuel and oil lines shall be kept at a minimum and shall be as short as practicable. Flexible lines shall be routed or shielded so that failure of a line shall not allow fuel or oil to spray or drain onto any component operable above the auto-ignition temperature of the fluid.

2.2.1.8.3. Flexible lines shall be Teflon hoses with braided stainless steel jackets except in applications where premium hoses are required and shall have standard SAE or JIC brass or steel, swivel, end fittings. Flexible hoses over 1 inch in diameter need not be Teflon with braided stainless steel jacket but shall be in conformance with SAE Standard J100R5. Flexible hoses and fluid lines shall not touch one another, or any part of the bus.

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

2.2.1.8.5. 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.

2.2.1.9. **RADIATOR**

Radiator piping shall be painted steel ASTM A-513 and, if practicable, hoses shall be eliminated. Necessary hoses shall be premium, silicone rubber type that is impervious to all bus fluids. All hoses shall be as short as practicable. All hoses shall be secured with premium, stainless steel Breeze clamps that provide a complete 360 degree seal. The clamps shall maintain a constant tension at all times, expanding and contracting with the hose in response to temperature changes and aging of the hose material.

2.2.1.10. **OIL & HYDRAULIC LINES**

2.2.1.10.1. Oil and hydraulic lines shall be compatible with the fluid they carry. The lines shall be designed and intended for use in the environment which they are installed, i.e., high temperatures in engine compartment, road salts, oils, etc. Lines shall be capable of withstanding maximum system pressures. Lines within the engine compartment shall be composed of steel tubing where practicable.

2.2.1.10.2. 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.

2.2.1.11. **FUEL LINES**

2.2.1.11.1. Fuel lines shall be rated and sized to prevent freezing and plugging due to condensation and/or fuel gelling in extreme winter.

2.2.1.11.2. The fuel lines forward of the engine bulkhead shall be in conformance to SAE Standard J1149 Type 1 for copper tubing, corrosion-resistant stainless steel tubing or SAE Standard J844 for nylon tubing color coded orange.

2.2.1.12. CHARGE AIR PIPING

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

2.2.1.12.2. Charge air piping shall be constructed of aluminized steel, except between the air filter and turbocharger inlet where piping may be constructed of fiberglass. Connections between all charge air piping sections shall be sealed with a short section of reinforced Silicone S.50.106 4 ply hose and secured with stainless steel, Breeze clamps that provide a complete 360 degree seal.

2.2.1.13. FUEL SYSTEM

2.2.1.13.1. FUEL TANK

2.2.1.13.1.1. OPERATING RANGE

The operating range of the coach, when run on the transit coach duty cycle, shall be at least 350 miles.

2.2.1.13.1.2. CAPACITY

The vehicle shall have a single fuel tank with a total minimum capacity of 130 U.S. gallons

2.2.1.13.1.3. DESIGN AND CONSTRUCTION

2.2.1.13.1.3.1. The fuel tank shall be equipped with an external, hex head, brass drain plug. It shall be at least a 3/4-14 NPT size and shall be located at the lowest point of the tank. The fuel tank shall have an inspection plate or easily removable filler neck(s) to permit cleaning and inspection of the tank without removal from the bus. The tank shall be baffled internally to prevent fuel-sloshing noise regardless of fill level.

2.2.1.13.1.3.2. The fuel tank(s) shall be made of corrosion resistant 16GA. 304-2B type stainless steel

2.2.1.13.1.4. **INSTALLATION**

The fuel tank shall be securely mounted to the bus to prevent movement during bus maneuvers, but shall be capable of being removed and reinstalled for cleaning or replacement in 1.5 hours or less.

2.2.1.13.1.5. **LABELING**

The capacity, date of manufacture, manufacturer name, location of manufacture, and certification of compliance to Federal Motor Carrier Safety Regulation shall be permanently marked on the fuel tank(s). The information label shall be visible through the fuel filler door, located on top of the fuel tank.

2.2.1.13.2. **FUEL FILLER**

2.2.1.13.2.1. There shall be a fuel filler be located 32 feet 5 inches behind the centerline of the front door on the curbside of the bus and on the road side at the same height and approximate distance from the front of the vehicle

2.2.1.13.2.2. The filler caps 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.

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

2.2.1.13.2.4. The fuel filler shall be a standard automotive type to accommodate a diesel sized nozzle. Once disconnected, fuel shall not be allowed to flow through the filler at any time. Any pressure over 3 psi shall be relieved from the fuel tank automatically. An audible signal shall indicate when the tank is essentially full. The cap shall be retained to prevent loss.

2.2.1.14. **FINAL DRIVE**

The bus shall be driven by a single ZF, AV-132.D.DSK heavy-duty 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 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.

2.2.1.15. **EMISSIONS/EXHAUST**

2.2.1.15.1. **EXHAUST EMISSIONS**

The engine shall meet all applicable emission standards.

2.2.1.15.2. **EXHAUST SYSTEM**

2.2.1.15.2.1. Exhaust gases and waste heat shall be discharged from the roadside rear corner of the roof. The exhaust pipe shall be of sufficient height to prevent exhaust gases and waste heat from discoloring or causing heat deformation to the bus roof.

2.2.1.15.2.2. The entire exhaust system shall be adequately shielded to prevent heat damage to any bus component.

2.2.1.15.2.3. The exhaust outlet shall be designed to minimize rain, snow or water generated from high-pressure washing systems from entering into the exhaust pipe and causing damage to the catalyst. A 1/4 inch drainage hole shall be provided to evacuate water.

2.2.1.15.2.4. Entire exhaust system, including all fasteners & clamps shall be stainless steel

2.2.1.15.2.5. In order to meet all applicable emissions standards, an exhaust after treatment system shall be installed. The after treatment system shall be comprised of a Diesel particulate filter (DPF) and a Selective Catalytic Reduction (SCR). Both components shall be mounted in the engine compartment and shall be easily removable. A 10 U.S. gallons diesel emissions fluid tank (DEF) shall be provided. The lines between the DEF and the SCR will be electrically heated to prevent freezing. The DEF tank shall be heated using an integrated heater core that uses the engine coolant. The DEF filling nozzle shall be located at the rear curbside corner of the bus. A DEF level gauge shall be provided in the driver's area.

3. CHASSIS

3.1. SUSPENSION

3.1.1. **GENERAL REQUIREMENTS**

3.1.1.1. The front and rear suspensions shall be pneumatic type.

3.1.1.2. Front suspension shall be Goodyear 1R12-092 single air spring.

3.1.1.3. Rear suspension shall be Goodyear 1R11-232 double air spring.

3.1.1.4. The front & rear 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 in 30 minutes or less.

3.1.1.5. 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.

3.1.2. **SPRINGS AND SHOCK ABSORBERS**

3.1.2.1. **TRAVEL**

3.1.2.1.1. The suspension system shall permit a minimum wheel travel of 3 inches jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 3 inches rebound-downward travel when the bus comes off a bump and the wheels fall relative to the body.

3.1.2.1.2. Elastomeric bumpers shall be provided at the limit of jounce travel and shall be easy to replace and located inside the bellows Rebound travel may be limited by elastomeric bumpers within the shock absorbers.

3.1.2.1.3. Suspensions shall incorporate Barksdale 52321-Q166 valves for automatic height control so that regardless of load the bus height relative to the centerline of the wheels does not change more than ± 1/2 inch at any point from the height required.

3.1.2.1.4. **DAMPING**

3.1.2.1.5. Vertical damping of the suspension system shall be accomplished by hydraulic Sachs double-acting telescopic type shock absorbers mounted to the axles and attached to an appropriate location on the chassis.

3.1.2.1.6. Damping shall be sufficient to control coach motion to 3 cycles or less after hitting road perturbations. Shock absorbers shall maintain their effectiveness for at least 50,000 miles of the service life of the bus. Each unit shall be replaceable in less than 15 minutes. The shock absorber bushing shall be made of elastomeric material that will last the life of the shock absorber.

3.1.2.1.7. **LUBRICATION**

All elements of steering, suspension, and drive systems requiring scheduled lubrication shall be provided with grease fittings conforming to SAE Standard J534. These fittings shall be located for ease of inspection, and shall be accessible 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.

3.1.2.1.8. **KNEELING**

3.1.2.1.8.1. A kneeling system shall lower the entrance(s) of the bus by a minimum of 3.5 inches during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the entrance door(s), by the driver using a three position, spring loaded to center switch.

3.1.2.1.8.1.1. Downward direction will lower the bus. Release of switch at anytime will completely stop lowering motion and hold height of the bus at that position.

3.1.2.1.8.1.2. Upward direction of the switch will allow the system to go to floor height without the driver having to hold the switch up.

3.1.2.1.8.2. 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

3.1.2.1.8.3. at a maximum rate of 1.25 inches per second at essentially a constant rate.

3.1.2.1.8.4. After kneeling, the bus shall rise within 6 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVWR. During the lowering and raising operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec.

3.1.2.1.8.5. 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, shall be a minimum

2.5" diameter, LED amber lens shall be provided that will blink when the kneel feature is activated.

3.1.2.1.8.6. Kneeling shall not be operational while the wheelchair ramp is deployed or in operation.

3.2. **WHEELS AND TIRES**

3.2.1. **WHEELS**

Wheels and rims shall be hub-piloted, made of polished aluminum 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.

3.2.2. **TIRES**

Tires shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tire at GVWR shall not exceed the tire supplier's rating. The buses shall be equipped with low profile Michelin XZU2 305/70R 22.5 tires for the front and rear wheels.

3.3. **STEERING**

3.3.1. **FRONT AXLE**

3.3.1.1. The front axle shall be solid Drop beam axle ZF RL-85.A.C , non-driving with a load rating sufficient for the bus loaded to GVWR and shall be equipped with grease type front wheel bearings and seals

3.3.1.2. 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.

3.3.2. **STRENGTH**

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.

3.3.3. **TURNING RADIUS**

Outside body corner turning radius for a standard configuration 40-foot long bus shall not exceed 40 feet 10 inches.

3.3.4. **STEERING TURNING EFFORT**

3.3.4.1. The steering wheel shall be removable with a standard or universal puller.

3.3.4.2. The Douglas 929 steering column shall have full tilt and telescoping capability allowing the operator to easily adjust the location of the 18 in. diameter steering wheel.

3.3.4.3. Hydraulically assisted TRW model TAS85024 power steering shall be provided. The steering gear shall be an integral type with flexible lines eliminated or the number and length minimized.

3.3.4.4. With the bus on dry, level, commercial asphalt pavement, and tires inflated to recommended pressure and the front wheels positioned straight ahead, the torque required to turn the steering wheel 10 degrees shall be no less than 5 foot pounds and no more than 10 foot pounds.

3.3.4.5. Steering torque may increase to 70 foot pounds when the wheels are approaching the steering stops**,** as the relief valve activates.

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

3.3.4.7. The power steering shall have an automatic adjustment system

3.3.4.8. Power steering failure shall not result in loss of steering control.

3.3.4.9. With the bus in operation the steering effort shall not exceed 55 pounds at the steering wheel rim and perceived free play in the steering system shall not materially increase as a result of power assist failure.

3.3.4.10. Gearing shall require no more than four turns of the steering wheel lock-to-lock.

3.3.4.11. 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.

3.3.5. **STEERING WHEEL – GENERAL**

3.3.5.1. The steering wheel shall be Vehicle Improvement Products (VIP) model VIP19 with a 18" diameter; the rim diameter shall be 1 1/4" and shaped for firm grip with comfort for long periods of time.

3.3.5.2. The steering wheel shall be removable with a standard or universal puller. 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.

3.3.6. **STEERING WHEEL TILT**

The steering tilt shall have an adjustment range of at least 47 degrees from the horizontal and upright position with at least 7 tilt positions.

3.3.7. **STEERING WHEEL TELESCOPIC ADJUSTMENT**

3.3.7.1. Measurement - From the top of the rim of the steering wheel in the horizontal position to the cab floor at the heel point**.**

3.3.7.2. The steering wheel shall adjust to maximum height of 5" and a minimum low-end adjustment of 29"**.**

The following chart is acknowledged as the standard for measurements of thigh clearance, resting elbow height, the slope of the steering wheel, and the height of the wheel, and the relationship of one to another, to assist in determining the appropriate telescopic range**.** *(Based on Drillis and Contini, 1966)*

	Thigh Clearance	Resting Elbow Height
95 Percentile Female	19.1"	22.1"
95 Percentile Male	25.6"	30.4"

Steering Wheel Height (Measured from Bottom Portion Closest to Driver) Relative to Angle of Slope			
At Minimum Telescopic Height Adjustment (29")		At Maximum Telescopic Height Adjustment (5")	
Angle of Slope	Height	Angle of Slope	Height
0 degrees	29"	0 degrees	35"
15 degrees	26.2"	15 degrees	30.2"
25 degrees	24.6"	25 degrees	28.6"
35 degrees	22.5"	35 degrees	26.5"

3.4. BRAKES

3.4.1. SERVICE BRAKE

3.4.1.1. ACTUATION

3.4.1.1.1. Service brakes shall be controlled and actuated by a compressed air system.

3.4.1.1.2. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 50 pounds at a point 7 inches above the heel point of the pedal to achieve maximum braking. The heel point is the location of the driver's heel when foot is rested flat on the pedal and the heel is touching the floor or heel pad of the pedal.

3.4.1.1.3. A microprocessor controlled Bendix-6 ABS system with Automatic Traction Control shall be provided. The microprocessor for the ABS system shall be protected yet in an accessible location to allow for ease of service.

3.4.1.1.4. The total braking effort shall be distributed between all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations.

3.4.1.1.5. Actuation of ABS and/or ATC shall override the operation of the brake retarder.

3.4.1.2. FRICTION MATERIAL

The entire service brake system, including friction material, shall have a minimum overhaul or replacement life of 60,000 miles with a brake retarder on the design operating profile. Brakes shall be self-adjusting throughout this period. The brake linings shall be made of non-asbestos material and shall have a friction material thickness of 0.866 inches. In order to aid maintenance personnel in determining extent of wear, an LED brake wear indicator shall be located on the engine control box, three levels of light warnings shall be presented:

- Green : 0.866 inches ≥pad thickness> 0.314 inches
- Amber : 0.314 inches ≥pad thickness>0.118 inches
- Red : pad thickness≥ 0.118 inches
- This information shall be available in the information panel in the driver's area.

3.4.1.3. DISCS

3.4.1.3.1. Replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design.

3.4.1.3.2. Wheel bearing and hub seals shall not leak or weep lubricant for 100,000 miles when running on the design operating profile.

3.4.1.3.3. The bus shall be equipped with Knorr SN7000 disc brakes on the front and Knorr SB7000 on the rear axles and the brake discs shall allow machining the surfaces up to 0.16 inches each side to obtain smooth surfaces.

3.4.1.3.4. 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.

3.4.2. PARKING /EMERGENCY BRAKE

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.

3.5. PNEUMATIC SYSTEM

3.5.1. GENERAL

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

3.5.1.2. Provision shall be made to apply shop air to the bus air systems using a standard tire inflation type valve. A quick disconnect fitting, shall be easily accessible and located in the engine compartment and near the front bumper area for towing. Retained caps shall be installed to protect fitting against dirt and moisture when not in use.

3.5.1.3. Air for the compressor shall be filtered through the main engine air cleaner system. The air system shall be protected by a pressure relief valve set

at 175psi and shall be equipped with check valve and pressure protection valves to assure partial operation in case of line failures.

3.5.2. **AIR COMPRESSOR**

The engine-driven WABCO 18.7 air compressor shall be sized to charge the air system from 40psi to the governor cutoff pressure in less than 3 minutes while not exceeding the fast idle speed setting of the engine.

3.5.3. **AIR LINES AND FITTINGS**

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844 for nylon tubing if not subject to temperatures over 200 degrees F. Nylon tubing shall be installed in accordance with the following color-coding standards:

Green-	Indicates primary brakes and supply
Red-	Indicates secondary brakes
Brown-	Indicates parking brake
Yellow-	Indicates compressor governor signal
Black-	Indicates accessories
Blue-	Indicates kneeling system

3.5.3.1. Line supports shall prevent movement, flexing, tension strain, and vibration.

3.5.3.2. 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.

3.5.3.3. Copper lines shall be bent only once at any point, including pre-bending and installation.

3.5.3.4. Rigid lines shall be supported at no more than 5-foot intervals

3.5.3.5. Nylon lines may be grouped and shall be supported at 2-foot intervals or less.

3.5.3.6. The compressor discharge line between power plant and body-mounted equipment shall be Aeroquip Teflon hose with a braided stainless steel jacket.

3.5.3.7. Other lines necessary to maintain system reliability shall be flexible Teflon hose with a braided stainless steel jacket.

3.5.3.8. 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.

3.5.3.9. Flexible lines shall be supported at 2-foot intervals or less.

3.5.3.10. Air lines shall be clean before installation and shall be installed to minimize air leaks.

3.5.3.11. All air lines shall be sloped toward a reservoir and routed to prevent water traps.

3.5.3.12. Grommets or insulated clamps shall protect the air lines at all points where they pass through understructure components.

3.5.4. AIR RESERVOIRS

All air reservoirs shall meet the requirements of FMVSS Standard 121 and SAE Standard J10 and shall be equipped with manual and automatic 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.

3.5.5. AIR SYSTEM 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, a Haldex condenser with automatic drain valve and activation device. A mechanic shall replace the desiccant in less than 15 minutes.

4. BODY

4.1. GENERAL

4.1.1. DESIGN

4.1.1.1. The bus shall have a clean, smooth, streamlined and simple design.

4.1.1.2. The exterior and body features, including grilles and louvers, shall be shaped to facilitate cleaning by automatic bus washers without snagging washer brushes.

4.1.1.3. 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.

4.1.1.4. 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.

4.1.1.5. Exterior panels shall be sufficiently stiff to minimize vibration, drumming or flexing while the bus is in service.

4.1.1.6. 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.

4.1.1.7. The windows and hatches shall be sealed. Accumulation on any window of the bus of spray and splash generated by the bus' wheels on a wet road shall be minimized.

4.2. **CRASHWORTHINESS**

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

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

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

4.3. **MATERIALS**

4.3.1. 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.

4.3.2. The body materials shall be white gel coated non structural fiberglass panels for the roof, front and rear end caps and upper side panels. The lower side panels shall be medium grey thermoplastic Triax non structural low impact resistant.

4.4. **CORROSION**

4.4.1. The bus flooring, sides, roof, understructure, axle suspension components shall resist corrosion or deterioration from atmospheric conditions and road salts for a period of 12 years or 500,000 miles which ever comes first.

4.4.2. It shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided that it is maintained by the Clermont Transportation Connection (CTC) 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.

4.4.3. The structure of the vehicle shall be constructed using **only stainless steel materials and fasteners** to minimize deterioration. An asphalt-based undercoating shall be applied to wheel wells and the bottom section of the side walls, while wax-based undercoating shall be applied to the understructure

4.4.4. The structure shall not require corrosion-preventive coatings or after-treatments throughout the service life of the vehicle.

4.4.5. All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings.

4.4.6. All joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. Representative samples of all materials and connections shall withstand a 2-week (336-hour) salt spray test in accordance with ASTM Procedure B-117 with no structural detrimental effects to normally visible surfaces, and no weight loss of over 1 percent.

4.5. RESONANCE AND VIBRATION

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

4.6. FIRE PROTECTION

4.6.1. The passenger and engine compartments shall be separated by a bulkhead(s) that shall, by incorporation of fireproof materials in its construction, be a firewall. The engine compartment shall include areas where the engine and exhaust systems are housed including the muffler, if mounted above the horizontal shelf.

4.6.2. This firewall shall preclude or retard propagation of an engine compartment fire into the passenger compartment. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed.

4.6.3. Any passageways for the climate control system air shall be separated from the engine compartment by fireproof material.

4.6.4. Piping through the bulkhead shall have copper, brass, or fireproof fittings sealed at the firewall with copper or steel piping on the forward side.

4.6.5. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall.

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

4.7. DISTORTION

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

5. STRUCTURE

5.1. GENERAL

5.1.1. DESIGN

5.1.1.1. The structure of the bus shall be designed to withstand the transit service conditions typical of an urban duty cycle throughout its service life.

5.1.1.2. The vehicle structural frame shall be designed to operate with no maintenance throughout a minimum 12-years under the Design Operating Profile.

5.1.1.3. The vehicle shall be constructed using only Stainless steel materials and fasteners to minimize deterioration. The structure shall not require corrosion-preventive coatings or after-treatments either during construction or through the service life of the vehicle.

5.1.2. ALTOONA TESTING

Prior to acceptance of first bus, the structure of the bus shall have undergone appropriate structural testing and/or analysis, including FTA required Altoona testing, to ensure adequacy of design for the urban transit service. Any items that required repeated repairs or replacement must undergo the corrective action with supporting test and analysis. A report clearly describing and explaining the

failures and corrective actions taken to ensure any and all such failures will not occur shall be submitted to the Clermont Transportation Connection (CTC).

5.1.3. **TOWING**

5.1.3.1. Towing devices shall be provided on each end of the bus. Towing devices should accommodate flat-bedding or flat-towing.

5.1.3.2. 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.

5.1.3.3. The rear towing device(s) shall not provide a toehold for unauthorized riders.

5.1.3.4. 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.

5.1.4. **JACKING**

5.1.4.1. It shall be possible to safely jack up the bus, at curb weight, with a common 10-ton floor jack with or without special adapter, when a tire or dual set is completely flat and the bus is on a level, hard surface, without crawling under any portion of the bus.

5.1.4.2. Jacking from a single point shall permit raising the bus sufficiently high to remove and reinstall a wheel and tire assembly.

5.1.4.3. Jacking pads located on the axle or suspension near the wheels shall permit easy and safe jacking with the flat tire or dual set on a 6-inch-high run-up block not wider than a single tire.

5.1.4.4. Jacking and changing any one tire shall be completed in less than 30 minutes from the time the bus is approached. The bus shall withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage.

5.1.5. **HOISTING**

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.

5.1.6. **FLOOR**

5.1.6.1. **DESIGN**

5.1.6.1.1. The floor shall be essentially a continuous flat plane, except at the wheel housings and platforms.

5.1.6.1.2. The floor design shall consist of two levels (bi-level construction). Aft of where the rear door would be, extending to the rear settee riser, the floor height may be raised to a height approximately 17 inches above the lower level. An increase slope shall be allowed on the upper level not to exceed 2.0° off the horizontal.

5.1.6.1.3. The vehicle floor in the area of the entrance door shall have a lateral slope not exceeding 2^{o} to allow for drainage. Drains shall be supplied in the passenger area to allow for additional drainage required during cleaning.

5.1.6.2. **STRENGTH**

5.1.6.2.1. The floor deck shall be integral with the basic structure to prevent chafing or horizontal movement and designed to last the life of the bus.

5.1.6.2.2. Sheet metal screws shall not be used to retain the floor.

5.1.6.2.3. The floor shall be secured to the structure with adhesives and its effectiveness shall last throughout life of the coach.

5.1.6.2.4. The floor deck shall support passenger loads. At GVWR, the floor shall have an elastic deflection of no more than 0.60 inches from the normal plane.

5.1.6.2.5. The floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation.

5.1.6.2.6. Floor, with coverings applied, shall withstand a static load of at least 150 pounds applied through the flat end of a ½ inch-diameter rod, with 1/32-inch radius, without permanent visible deformation.

5.1.6.3. **CONSTRUCTION**

5.1.6.3.1. The floor shall consist of the subfloor and the floor covering. The floor, as assembled, including the sealer, attachments and covering shall be waterproof, nonhygroscopic, and resistant to mold growth. T

5.1.6.3.2. The subfloor shall be made of a composite sandwich of three layers. Honeycomb impregnated paperboard phenolic filled with

Foam polyurethane low density. Fiber glass sheets 0,04 in thick are used to cover both sides of the floor

5.1.6.4. **PLATFORMS**

5.1.6.5. **GENERAL**

Platform height shall not exceed 13 inches. Integral nosing shall be provided. Except where otherwise indicated, covering of platform surfaces and risers shall be same material as specified for floor covering.

5.1.6.6. **OPERATOR'S PLATFORM**

5.1.6.6.1. 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, 26" from the leading edge of the bumper.

5.1.6.6.2. Notwithstanding this requirement, the platform height shall not position the operator such that the operator's vertical upward view is less than 15 degrees above windshield.

5.1.6.6.3. A warning decal or sign shall be provided to alert operator to the change in floor level.

5.1.6.7. **FAREBOX**

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

5.1.6.8. **INTERMEDIATE PLATFORM**

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 a minimum of 15 inches deep and one half the height of the upper level relative to the lower level. The horizontal surface of this platform shall be covered with the same flooring material used throughout the bus and shall incorporate a yellow nosing. A warning decal or sign shall be provided at the immediate platform area to alert passengers to the change in floor level.

5.1.7. **WHEEL HOUSING**

5.1.7.1. **DESIGN**

5.1.7.1.1. 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.

5.1.7.1.2. 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.

5.1.7.1.3. Wheel housings shall be adequately reinforced where seat pedestals are installed.

5.1.7.1.4. Wheel housings shall have sufficient sound insulation to minimize tire and road noise and meet all requirements of this document.

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

5.1.7.1.6. 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. Fiberglass wheel housings shall be provided and shall be color-impregnated to match interior finishes.

5.1.7.2. **CONSTRUCTION**

5.1.7.2.1. Wheel housings shall be constructed of corrosion-resistant, fire-resistant material.

5.1.7.2.2. Wheel housings, as installed and trimmed, shall withstand impacts of a 2-inch steel ball with at least 200 foot-pounds of energy without penetration.

5.1.7.2.3. The structural wheel housings shall be covered with a protective coating anti-corrosive Tectyl 5164.

6. EXTERIOR PANELS AND FINISHES

6.1. PEDESTRIAN SAFETY

6.1.1. Exterior protrusions greater than 1/2 inch and within 72 inches of the ground shall have a radius no less than the amount of the protrusion.

6.1.2. The exterior rearview mirrors and required lights and reflectors are exempt from the protrusion requirement.

6.1.3. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize the ability of unauthorized riders to secure toeholds or handholds.

6.2. REPAIR AND REPLACEMENT

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

6.2.2. Lower exterior panels within 28 inches above ground level shall be equipped with removable resilient, impact resistant panels for protection against minor impacts and scratches. The panels shall withstand impacts of 200 foot-pounds of energy from a steel-faced spherical missile no less than 9 inches in diameter without any visible damage to it or underlying panel and structure. The panels shall be no greater than 5 feet in length and shall be easily replaced in less than 10 minutes. The panels shall be grey thermoplastic panels.

6.2.3. The rear corners shall be removable and replaceable within 10 minutes and not requiring special tools.

6.3. 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 decelerated, the gutters shall not drain onto the windshield, or operator's side window, or into the door boarding area. Cross sections of the gutters shall be adequate for proper operation. Rain gutter shall also be provided above passenger side windows.

6.4. LICENSE PLATE PROVISIONS

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

6.5. FENDER SKIRTS

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

6.6. MUD FLAPS

6.6.1. Splash aprons, composed of 1/4-inch-minimum composition or rubberized fabric, shall be installed behind and/or in front of wheels as needed to reduce road splash and protect underfloor components.

6.6.2. The splash aprons shall extend downward to within 4 inches of the road surface at static conditions. Apron widths shall be no less than tire widths, except for the front apron that shall extend across the width of the bus.

6.6.3. Splash aprons shall be bolted to the bus understructure.

6.6.4. Splash aprons and their attachments shall be inherently weaker than the structure to which they are attached.

6.6.5. The flexible portions of the splash aprons shall not be included in the road clearance measurements.

6.6.6. Other splash aprons shall be installed where necessary to protect bus equipment.

6.7. EXTERIOR SERVICE COMPARTMENTS AND ACCESS DOORS

6.7.1. Top hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments including doors for checking the quantity and adding to the engine coolant, engine lubricant and transmission fluid.

6.7.2. Access openings shall be sized for easy performance of tasks within the compartment including tool operating space.

6.7.3. Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the bus.

6.7.4. They shall close flush with the body surface.

6.7.5. All doors shall be hinged at the top and shall be prevented from coming loose or opening during transit service or in bus washing operations.

6.7.6. 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 gas-filled springs and shall be easily operable by one person.

6.7.7. Springs and hinges shall be corrosion resistant.

6.7.8. Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for opening.

6.7.9. Access doors, when opened, shall not restrict access for servicing other components or systems.

6.8. BATTERY COMPARTMENT

6.8.1. The batteries shall be securely mounted on a stainless steel tray that can accommodate the size and weight of the batteries.

6.8.2. The battery tray shall swing out easily and properly support the batteries while they are being serviced.

6.8.3. 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.

6.8.4. The battery compartment or enclosure shall be vented and self-draining. It shall be accessible only from outside the bus.

6.8.5. 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.

6.8.6. 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. Battery terminals shall be located to allow disconnecting the battery cables while the tray is in the stow position.

6.9. SERVICE AREA LIGHTING

6.9.1. A minimum of 3 white LED lights shall be provided in the engine and all other compartments, where service may be required, to generally illuminate the area for night emergency repairs or adjustments

6.9.2. Sealed LED lamp assemblies shall be provided in the engine compartment and shall be controlled by a switch located near the rear start controls in the engine compartment.

6.9.3. Necessary LED lights, located in other service compartments, shall be provided with switches on the light fixture or convenient to the light.

6.10. BUMPERS

6.10.1. LOCATION

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

6.10.2. FRONT BUMPER

No part of the bus, including the bumper, shall be damaged as a result of a 2-mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus' longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact.

6.10.3. **REAR BUMPER**

No part of the bus, including the bumper, shall be damaged as a result of a 2-mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus.

6.10.4. **BUMPER MATERIAL**

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

6.11. FINISH AND COLOR

6.11.1. All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces shall be UV-resistant gel coated finish fiberglass panels. Lower side panels shall be medium grey thermoplastic Triax non structural low impact side skirts. The proposed shell shall be impervious to corrosion and the side skirts shall be easily replaceable in less than 10 minutes.

6.11.2. Except for periodic cleaning, exterior surfaces of the bus shall be maintenance-free permanently colored and not require refinish/repaint for the life of the vehicle

6.11.3. Durable, peel-resistant pressure sensitive appliqués shall be used for any striping and coloring required

6.11.4. CTC realizes that different vehicle manufacturers may need to change the design to suite their vehicles, but it is very important for all CTC vehicles to maintain a uniform look, accordingly it is extremely important that bidders finalize an exterior design before bid submittal. CTC has never purchased this type of vehicle before, some changes are expected and pictures of current vehicles are provided for a base design. CTC encourages bidders to design sleek and modern-looking paint schemes to fit the vehicle they propose, but any design must be easily identifiable as a CTC bus and use the same basic colors, logos, and general style.

6.11.5. Pictures of current CTC vehicles are included at the end of this section for reference.

6.11.6. All designs must be approved by the CTC Director before they may applied, any changes required after contract award will be done at the contractors expense if the designs were not approved prior to contract award

6.11.7. All exterior surfaces shall be smooth and free of visible fasteners, dents and other imperfections.

6.11.8. Base exterior color to be DuPont color: Gray LS120. This shall cover the entire exterior with the exception of the roof and lower skirt.

6.11.9. The lower skirt shall be DuPont color: Yellow YS914

6.11.10. Any lettering placed in the yellow skirting shall be black reflective

6.11.11. A 2" white stripe separating the gray area from the yellow area shall be applied to the side of the vehicle, this stripe is to continue the length of the vehicle. The stripe shall be made of white reflective vinyl applied with adhesive.

6.11.12. The words "Clermont Transportation Connection" shall be written on the side of the vehicle in "Bold Century Gothic" font and shall be the same material white reflective vinyl as the stripe. The logo for CTC shall be placed toward the rear of the vehicle on both sides. On the curb side the logo shall be centered in the lower section of the wheel chair lift door. The driver side shall be in an equivalent position, so that both sides of the vehicle look as similar as possible. Bidders will be provided with an electronic copy of this logo.

6.11.13. There shall be the phrase "USDOT 1063916" in the lower, front most corner of the bus body, just above the white stripe. This shall be written in "Century Gothic" font and be made of the same white reflective vinyl as the stripe.

6.11.14. On the rear of the bus the phone number "732-7433" shall be centered between the brake, turn, & reverse lights horizontally and centered between the bumper and rear window vertically.

6.11.15. On the rear of the bus the phrase "STOPS AT ALL RAILROAD CROSSINGS" shall be placed on the bottom right corner of the bus just above the white reflective stripe and shall be made of the same material as the stripe.

6.11.16. CTC Vehicle numbers shall be applied to the front and rear of the vehicle using the same white reflective century gothic font as specified previously in this section. Number placement shall be the top left and right corners on the front and rear of the bus.

Reference Picture #1

Reference Picture #2

Reference Picture #3

Reference Picture #4

6.12. **EXTERIOR LIGHTING**

6.12.1. All exterior lights shall be designed to prevent entry and accumulation of moisture or dust, and each lamp shall be replaceable in less than 5 minutes.

6.12.2. LED (Light Emitting Diode)-type lamps shall on all exterior lighting excluding the headlights. Headlights shall be 24 v sealed beams.

6.12.3. No lights shall be mounted on the engine compartment door. Lamps, lenses and fixtures shall be interchangeable to the extent practicable. Two hazard lamps at the rear of the bus shall be visible from behind when the engine service doors are opened.

6.12.4. 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.

6.12.5. 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.

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

6.12.7. LED Turn-signal lights shall be provided on both sides of the bus.

7. **INTERIOR PANELS AND FINISHES**

7.1. **GENERAL**

7.1.1. 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 markings. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.

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

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

7.1.3. Interior walls and ceiling panels shall be Anti-graffiti and easy to clean Arborite.

7.2. FRONT END

7.2.1. 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.

7.2.2. 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 charcoal grey textured dull matte surface to reduce glare.

7.3. REAR END

The rear bulkhead and rear interior surfaces shall be material suitable for exterior skin shall be Arborite panels or UV-resistant gel coated finish fiberglass panels.

7.4. INTERIOR PANELS

7.4.1. GENERAL

7.4.1.1. Interior side trim panels and operator's barrier shall be textured aluminum. Panels shall be easily replaceable and tamper-resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of transit bus service.

7.4.1.2. Individual trim panels and parts shall be interchangeable to the extent practicable.

7.4.1.3. Untrimmed areas shall be painted and finished in charcoal grey to prevent glare.

7.4.2. OPERATOR'S COAT HANGER

A suitable hanger shall be installed in a convenient approved location for the operator's overcoat.

7.4.3. OPERATOR BARRIER

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

7.4.5. Operator's Barrier shall extend continually from floor to ceiling and from the bus wall to first stanchion immediately behind the Operator to provide security to the Operator and limit passenger conversation.

7.4.6. Location and shape must permit full seat travel possibilities and accommodate the shoulders of a 95^{th} percentile male

7.4.7. Partition shall have a side return and stanchion to prevent passenger from standing behind the Operator's seat; lower area between seat and panel must be accessible to the Operator**.**

7.4.8. Partition must be strong enough in conjunction with entire partition assembly for mounting of such equipment as flare kits, fire extinguishers (1.2kg), microcomputer, public address amplifier, etc.

7.4.9. Partition shall be flush with the floor

7.4.10. Panels shall be Charcoal gray

7.5. OPERATOR STORAGE BOX

An enclosed Operator storage area shall be integrated to the dash and shall have a positive latching door; approximate size shall be: Size:8X15X9.5 inches

7.6. MODESTY PANELS

7.6.1. 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

7.6.2. Location of Modesty panels shall be located depending on the seat layout. Design and installation of modesty panels located in front of forward facing seats shall include a handhold/grabhandle along its side edge.

7.6.3. 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.

7.6.4. 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 of 1-1/2 inch above the floor. Panels forward of longitudinal seats shall extend to below the level of the seat cushion.

7.6.5. Dividers positioned at the doorways shall provide no less than a 2-1/2-inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails consistent with those in the rest of the bus. The modesty panel and its mounting shall withstand a static force of 250 pounds applied to a four-inch by four-inch area in the center of the panel without permanent visible deformation

7.7. REAR BULKHEAD

7.7.1. The rear bulkhead paneling shall be made of reinforced fiberglass and 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.

7.7.2. The rear bulkhead shall incorporate a rear window with an approximate size of 22 inches in height by 54 inches in width.

7.8. HEADLINING

7.8.1. The walls and ceiling shall be covered with melamine panels, Arborite Quartz.

7.8.2. 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.

7.8.3. Moldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, anodized aluminum or plastic, colored to complement the ceiling material.

7.8.4. 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.

7.9. FASTENING

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.

7.10. INSULATION

7.10.1. Any insulation material used between the inner and outer panels shall be sealed to minimize entry and/or retention of moisture.

7.10.2. Insulation properties shall be unimpaired during the service life of the bus.

7.10.3. Any insulation material used inside the engine compartment shall not absorb or retain oils or water and shall be designed to prevent casual damage that may occur during maintenance operations.

7.10.4. The combination of inner and outer panels on the sides, roof, wheel wells and ends of the bus, and any material used between these panels shall provide a thermal insulation sufficient to meet the interior temperature requirements. The bus body shall be thoroughly sealed so that the operator or passengers cannot feel drafts during normal operations with the passenger doors closed.

7.11. FLOOR COVERING

7.11.1. The floor covering is "Rubber Solutions Gray Transit" or the equivalent.

7.11.2. The aisle and front entrance area is covered in 3/16" ribbed rubber.

7.11.3. The floor area under the seats is covered with smooth gray rubber Steps are covered with 3/16" ribbed rubber with a 2" yellow safety nosing on each step edge.

7.11.4. Step tread is of one-piece rubber flooring. The floor covering is butt jointed and securely cemented to the sub floor with a waterproof adhesive.

7.11.5. 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.

7.11.6. The standee line shall be 3 inches wide and shall extend across the bus aisle. This line shall be yellow. Color/pattern shall be consistent throughout the floor covering.

7.11.7. Any areas on floor, which are not intended for standees, such as areas "swept" during passenger door operation, shall be clearly and permanently marked with yellow floor covering.

7.11.8. The floor in the operator's compartment shall be easily cleaned and shall be arranged to minimize debris accumulation.

7.11.9. The floor throughout the bus shall be covered with a smooth surface flooring material.

7.12. PASSENGER INTERIOR LIGHTING

7.12.1. The interior lighting system shall be 100% LED and provide a minimum 15 foot-candle illumination on a 1 square foot plane at an angle of 45 degrees from horizontal, centered 33 inches above the floor and 24 inches in front of the seat back at each seat position.

7.12.2. Allowable average light level for the rear bench seats shall be 7 foot-candles. Floor surface in the aisles shall be a minimum of 10 foot-candles, vestibule area a minimum of 4 foot-candles with the front doors open and a minimum of 2 foot-candles with the front doors closed.

7.12.3. The front entrance area and curb lights shall illuminate when the front door is open in all engine run conditions.

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

7.12.5. 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.

7.12.6. Lens material shall be clear polycarbonate. Lens shall be designed to effectively "mask" the LED light. Lens shall be sealed to inhibit incursion of dust and insects yet are easily removable for service. If threaded fasteners are used they must be held captive in the lens. Access panels shall be provided to allow servicing of components located behind light panels. If necessary, the entire light fixture shall be hinged.

7.12.7. Individual ballast units shall be provided (if necessary) for each light fixture. Ballast shall have a fireproof housing, minimum operating frequency of above audible range, reverse polarity protection, integrated circuit breaker/automatic thermal protection, and rebuildable.

7.12.8. The light system may be designed to form part or the entire air distribution duct.

7.12.9. A LED light and switch located on the overhead panel is provided to illuminate the farebox area.

7.13. **FARE COLLECTION**

7.13.1. Space, as far forward as practicable and structural provisions shall be made for installation of currently available fare collection device(s).

7.13.2. Location of the fare collection device shall not restrict traffic in the vestibule, including wheelchairs if a front door loading device is used, and shall allow the operator to easily reach the farebox controls and to view the fare register.

7.13.3. 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 1.4.7.2)

7.13.4. 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.

7.13.5. 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.

7.13.6. Transfer mounting, cutting, and punching equipment shall be located in a position convenient to the operator.

7.14. ACCESS PANELS AND DOORS – INTERIOR

7.14.1. Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior.

7.14.2. Access doors shall be hinged with gas props, where practical, to hold the doors out of the mechanic's way.

7.14.3. Panel fasteners shall be standardized so that only one tool is required to service all special fasteners within the bus.

7.14.4. 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, 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.

8. PASSENGER ACCOMMODATIONS

8.1. PASSENGER SEATING

8.1.1. ARRANGEMENTS AND SEAT STYLE

8.1.2. The seat layout shall accommodate as many forward facing seats as possible. including forward facing seats in where the step well area would be if the vehicle were equipped with a rear door. Seating layouts must be approved by the CTC director prior to bid submittal. Any changes made after a contract is awarded shall be the responsibility of the contractor if a seating layout was not approved prior to contract award.

8.1.3. Seating shall be 4One Mariella model with the below options:

8.1.3.1. Stainless steel mounting package
8.1.3.2. Top & corner grab rails, black
8.1.3.3. Gray ABS plastic backs
8.1.3.4. FTA Foam
8.1.3.5. Fully padded intercity inserts
8.1.3.6. Transit Style Ridged Backs

8.1.4. Fixed Seat Dimensions must conform to 4One Seating Company specifications for seat model "Mariella"

8.1.5. Seats shall have a minimum of 27" hip to knee spacing

8.1.6. Upholstery material for all seats shall be Freedman Seating Company color "Vogue Slate" Level 3.5 MOR-CARE vogue Vinyl or closest match (Must be approved prior to bid submittal.)

8.1.7. Passenger seats shall be installed on a track system to permit convenient removal and rearrangement. Where exposed, the track shall be covered with a vinyl track plug strip. The seat track shall be integral to the structure of the bus to provide secure seat anchorage, and to provide additional side crash barrier protection in the body structure.

8.1.8. Passenger seats shall have under seat lighting that is LED in type and illuminated whenever the vehicle is in operation.

8.1.9. The driver's seat shall be a USSC "9500 series Driver Seat" with manually adjusted lumbar, reclining feature, and right hand adjustable arm rest.

8.1.9.1. Seat shall be equipped with retractable shoulder and lap belts
8.1.9.2. Upholstery material shall be Freedman Seating Company color "Vogue Slate" Level 3.5 MOR-CARE vogue Vinyl.
8.1.9.3. Air operated up & down feature

8.1.10. The passenger seat frame and its supporting structure shall be constructed and mounted so that space under the seat is maximized to increase wheelchair maneuvering room and is completely free of obstructions to facilitate cleaning.

8.2. PASSENGER ASSISTS

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

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

8.2.3. 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. 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 powder coated yellow made of stainless steel. Seat handholds may be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of of powder coated yellow made of stainless steel. Connecting tees and angles may be yellow powder coated metal castings. Assists shall withstand a force of 300 pounds applied over a 12-inch lineal dimension in any direction normal to the assist without permanent visible deformation. All passenger assist components, including brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

8.3. FRONT DOORWAY

Front doors, or the entry area, shall be fitted with ADA compliant assists. Assists shall be as far outward as practicable, but shall be located no farther inboard than 6 inches from the outside edge of the entrance step and shall be easily grasped by a 5th-percentile female boarding from street level. Door assists shall be functionally continuous with the horizontal front passenger assist and the vertical assist and the assists on the wheel housing or on the front modesty panel. Each door side has a grab handle located no more than 40 inches from the ground.

8.4. VESTIBULE

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

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

8.5. REAR DOORWAYS

This vehicle shall NOT be equipped with a rear door.

8.6. OVERHEAD

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

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

8.7. LONGITUDINAL SEATS

Longitudinal seats shall have vertical assists located between every other designated seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist. Assists shall be staggered across the aisle from each other where practicable and shall be no more than 52 inches apart or functionally continuous for a 5^{th} percentile female passenger.

8.8. WHEEL HOUSING BARRIERS/ASSISTS

Unless passenger seating is provided on top of wheel housing, passenger assists shall be mounted around the exposed sides of the wheel housings which shall also be designed to prevent passengers from sitting on wheel housings.

8.9. PASSENGER DOOR

8.9.1. GENERAL

8.9.1.1. One doorway shall be provided in the curbside of the bus for passenger ingress and egress. The 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.

8.9.1.2. The door style for the front door shall be slide glide.

8.9.2. MATERIALS AND CONSTRUCTION

8.9.2.1. 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.

8.9.2.2. 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.

8.9.2.3. The front leaves of the passenger doors shall overlap the rear leaves.

8.9.2.4. The door pivots shall be stainless steel and replaceable without withdrawing the panels

8.9.3. DIMENSIONS

Front door clear width shall be no less than 43 inches with the doors fully opened.

8.9.4. DOOR GLAZING

8.9.4.1. The upper section of the door shall be glazed for no less than 45 percent of the respective door opening area of each section. The lower section of the door shall be glazed for no less than 25 percent of the door opening area of the section.

8.9.4.2. The front door panel glazing material shall have a nominal ¼ inch or 6 mm thick tempered safety glass conforming with the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.

8.9.5. DOOR PROJECTION

The exterior projection of the front doors beyond the side of the bus shall be minimized and shall not block the line of sight to the rear of the bus via the curb side

mirror when the doors are fully open. The exterior projection of the door shall be minimized and shall not exceed 6 inches during the opening or closing cycles or when door is fully opened. Projection inside the bus shall not exceed 24 inches. The closing edge of each door panel shall have no less than 2 inches of soft weather stripping. The door, when closed, shall be effectively sealed and the hard surfaces of the door shall be at least 4 inches apart. The combined weather seal and window glazing elements of the front door shall not exceed 10 degrees of binocular obstruction of the operator's view through the closed door.

8.9.6. **DOOR HEIGHT ABOVE PAVEMENT**

It shall be possible to open and close either passenger door when the bus loaded to GVWR is not knelt and parked with the tires touching an 8-inch-high curb on a street sloping toward the curb so that the street side wheels are 5 inches higher than the right side wheels.

8.9.7. **CLOSING FORCE**

8.9.7.1. Closing door edge speed shall not exceed 19 inches per second.

8.9.7.2. Doors closed by return spring or counterweight-type device need not be equipped with an obstruction sensing device but shall be capable of being pushed to the point where the door starts to open with a force not to exceed 20 pounds applied to the center edge of the forward door panel.

8.9.7.3. It shall be possible to withdraw a 1-1/2 inch diameter cylinder from between the center edges of a closed and locked door with an outward force not greater than 35 pounds.

8.9.8. **ACTUATORS**

8.9.8.1. Door actuators shall be adjustable so that the door opening and closing speeds can be independently

8.9.8.2. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing.

8.9.8.3. The door actuators shall be powered by compressed air and rebuildable.

8.9.8.4. 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.

8.9.9. EMERGENCY OPERATION

8.9.9.1. In the event of an emergency, it shall be possible to open the door manually from inside the bus. A special safety door release valve is shall be located

close to the door behind a plastic window. In the case of an emergency, a passenger be able to break the window using hand pressure and handle shall be provided to release the doors.

8.9.9.2. The unlocking devices shall be clearly marked as an emergency-only device and shall require two distinct actions to actuate. The respective door emergency unlocking device shall be accessible from the entrance and exit areas.

8.9.9.3. When the door emergency device is actuated only the door interlock throttle system shall be actuated. Locked doors shall require a force of more than 100 pounds to open manually.

8.9.9.4. When the locked doors are manually forced to open, damage shall be limited to the bending of minor door linkage with no resulting damage to the doors, engines, and complex mechanism.

8.10. ACCESSIBILITY PROVISIONS

8.10.1. GENERAL

The design and construction of the bus shall be in accordance with all requirements defined in 49 CFR, Part 38, Subpart B: ADA Accessibility Specifications for Transportation Vehicles - Buses, Vans and Systems. Space and body structural provisions shall be provided at the front of the bus to accommodate the wheelchair loading system.

8.10.2. LOADING SYSTEM

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

8.10.3. WHEELCHAIR ACCOMMODATIONS

Two forward-facing 4One "Q'Pod" locations, as close to the wheelchair loading system as practical, shall provide parking space and securement system compliant with ADA requirements for a passenger in a wheelchair.

8.10.4. INTERIOR CIRCULATION

8.10.4.1. 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.

8.10.4.2. 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 33 inches.

8.10.4.3. Areas requiring 90-degree turns of wheelchairs should have a clearance arc dimension no less than 45 inches and in the parking area where 180-degree turns are expected, space should be clear in a full 60-inch-diameter circle.

8.10.4.4. A vertical clearance of 12 inches above the floor surface should be provided on the outside of turning areas for wheelchair footrest.

9. OPERATOR PROVISIONS

9.1. OPERATOR'S AREA

9.1.1. GENERAL

9.1.1.1. The operator's work area shall be designed to minimize glare to the extent possible.

9.1.1.2. Objects within and adjacent to this area shall be dark gray in color to reduce the reflection of light onto the windshield.

9.1.1.3. The finish used shall be resistant to UV radiation.

9.1.2. VISORS

9.1.2.1. An adjustable roller type sunscreen shall be provided over the operator's windshield and the operator's side window.

9.1.2.2. The sunscreen shall be capable of being lowered to the midpoint of the operator's window.

9.1.2.3. 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.

9.1.2.4. Once lowered, the screen shall remain in the lowered position until returned to the stowed position by the operator.

9.1.3. OPERATOR HAND CONTROLS

9.1.3.1. 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.

9.1.3.2. Operational controls, instrumentation, switches, and other system controls shall not be mixed with ventilation diffusers and non-operational controls or readouts.

9.1.3.3. Controls shall be located so that boarding passengers may not easily tamper with control settings.

9.1.3.4. The door control, kneel 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.

9.1.3.5. Doors shall be operated by a single control, conveniently located and operable in a horizontal plane by the operator's left hand. The setting of this control shall be easily determined by position and touch.

9.1.3.6. 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.

9.1.3.7. Graphical symbols shall conform to SAE Recommended Practice J2402, Road Vehicles - symbols For Controls, Indicators, and Tell Tales, where available and applicable.

9.1.3.8. Color of switches and controls shall be dark with contrasting typography or symbols.

9.1.3.9. Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from the vestibule or the operator's seat.

9.1.3.10. Switches, controls, and instruments shall be dust and water resistant consistent with the bus washing practice.

9.1.4. **NORMAL BUS OPERATION**

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:

9.1.4.1. Engine Start Switch or Button
9.1.4.2. Four Position Master Run Switch
9.1.4.3. Transmission Shift Select

9.1.4.4.Parking Brake
9.1.4.5.Door
9.1.4.6.High Beam
9.1.4.7.Turn Signals
9.1.4.8.Hazard Lights
9.1.4.9.Defroster
9.1.4.10. Kneel Ramp Control
9.1.4.11. Windshield Wiper
9.1.4.12. Instrument Panel Lighting Intensity
9.1.4.13. Accelerator and brake pedals shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material.

9.1.5. **MASTER RUN SWITCH**

The run switch shall be a four-position rotary switch with the following functions:

9.1.5.1.OFF

All electrical systems off, except power available for the passenger interior lighting, stoplights, turn lights, hazard lights, silent alarm, horn, fare box, fire detection equipment, engine compartment lights, and electronic equipment that require continuous energizing. If the bus is not operated for a period of 3 days, the total electric load due to devices that require continuous energizing shall not cause the battery to be discharged below the level necessary to start the engine.

9.1.5.1.1. Engine Running (without lights)
9.1.5.1.2. Engine Running (with lights)
9.1.5.1.3. Engine Off (Parking Lights On)

9.1.5.2. **DOOR CONTROL**

9.1.5.2.1. Doors shall open or close completely in not more than 2.0 seconds from the time of control actuation and shall be subject to the closing force requirements referenced in this document.

9.1.5.2.2. 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.

9.1.5.2.3. The front door shall remain in commanded state position even if power is removed or lost.

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

9.1.5.2.5. 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.

9.1.5.2.6. 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.

9.1.6. OPERATOR INTERIOR LIGHTS

9.1.7. 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.

9.1.8. 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" and "Night Park" except as noted in (2).

9.1.9. 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.

9.1.10. 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.)

9.1.11. All interior lighting shall be turned off whenever the transmission selector is in the reverse and engine run switch is in the "On" position. The interior lighting design shall require the approval of the Procuring Agency**.**

9.2. SPECIAL CONTROLS

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

9.2.1. ABS Diagnostics Test
9.2.2. Engine Diagnostic Test
9.2.3. Stop Engine Override
9.2.4. Chime
9.2.5. Drivers Fan
9.2.6. Fast Idle
9.2.7. Mirror Heater
9.2.8. Public Address System
9.2.9. Drivers HVAC
9.2.10. Diagnostic Light Panel Test
9.2.11. Fire Suppression (Opt.)
9.2.12. Hill Holder
9.2.13. Remote Mirror Control (Opt.)
9.2.14. Retarder
9.2.15. Kneel/Ramp Control
9.2.16. Heater Blower Interlock
9.2.17. LCD computer screen for driver information system with mechanic diagnostic interface

9.3. PASSENGER COMFORT CONTROLS

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

9.3.1. Climate Control
9.3.2. Temperature Select
9.3.3. Interior HVAC
9.3.4. Blower
9.3.5. Interior Lights
9.3.6. Dome Lights
9.3.7. Aisle/Under Seat Lights

9.4. CONTROLS LOCATION

9.4.1. Instrument Cluster: Operational gauges - speedometer, air pressure (primary and secondary), voltmeter(s), fuel and LCD diagnostics screen shall be located immediately in front of the operator's field of view.

9.4.2. Forward Left Side Control Panel: Operational controls and switches, including but not limited to emergency controls, transmission controls, windshield washer and defroster controls

9.4.3. Forward Right Side Control Panel: Operational controls and switches, including but not limited to kneel and ramp switches, operator's climate controls.

9.4.4. Left Side Console: Lighting controls and secondary operating controls including door, mirror, fire suppression and engine control.

9.4.5. Overhead Control Panel: System function controls, including destination sign keypad, cabin climate controls.

9.5. OPERATOR FOOT CONTROLS

9.5.1. ACCELERATOR

9.5.1.1. ACCELERATOR PEDAL ANGLE

9.5.1.1.1. The angle of the accelerator pedal shall be determined from a horizontal plane regardless of the slope of the cab floor.

9.5.1.1.2. The accelerator pedal shall be positioned at an angle of 44-46º degrees at the point of initiation of contact, and extend downward to an angle of 15-18 degrees at full throttle.

9.5.1.2. ACCELERATOR PEDAL DIMENSIONS

The floor mounted accelerator pedal shall be 10" - 12" long and 3" - 4" wide.

9.5.1.3. ACCELERATOR PEDAL FORCE

The force to depress the accelerator pedal shall be measured at the midpoint of the accelerator. The accelerator force shall be no less than 5 foot pounds and no more than 10 foot pounds.

9.5.1.4. ACCELERATOR INTERLOCK

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 front door control is activated. The braking effort shall be adjustable with hand tools. This system shall have an override switch not easily accessible to the diver

9.5.2. BRAKE

9.5.2.1. BRAKE PEDAL ANGLE

9.5.2.1.1. 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 45º degrees at the point of initiation of contact, and extend downward to an angle of 20-28 degrees at full depression.

9.5.2.2. BRAKE PEDAL DIMENSIONS

The floor mounted brake pedal shall be 10" - 12" long and 3" - 4" wide.

9.5.2.3. **BRAKE FORCE**

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.

9.5.2.4. **RELATIVE POSITION BETWEEN ACCELERATOR PEDAL AND BRAKE PEDAL**

The accelerator and brake pedals shall be positioned such that the spacing between them, measured at the heel of the pedals, is 2".

9.5.2.5. **ACCELERATOR AND BRAKE PEDAL LOCATION AND LATERAL ANGLE**

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 13-degree lateral angle to coincide with the position of the operator's leg as it moves outward to operate the accelerator pedal.

9.5.3. **OPERATOR FOOT SWITCHES**

9.5.3.1. **TURN SIGNAL PLATFORM**

The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at 28 degrees. It shall be located no closer to the seat-front than the heel point of the accelerator pedal.

9.5.3.2. **TURN SIGNAL CONTROLS**

Turn signal controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty, momentary electronic contact switches. The turn signal shall be model EFS-HF and shall be mounted on a stainless steel box.

9.6. **INSTRUMENTATION**

9.6.1. The speedometer, air pressure gauge(s), LCD display for on board computer, and certain indicator lights shall be located in the Instrument Panel immediately ahead of the steering wheel.

9.6.2. 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.

9.6.3. Illumination of the instruments shall be simultaneous with the marker lamps.

9.6.4. Glare or reflection from the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized.

9.6.5. Instruments shall be easily readable in direct sunlight or shielded in such a manner that sunlight does not adversely affect legibility.

9.6.6. 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.

9.6.7. Text shall be a minimum of 11 points.

9.6.8. The color of the display field shall be dark with contrasting typography**.**

9.6.9. Indicator lights or illuminated symbols or typograph***y*** immediately in front of the operator shall be restricted to those concerned with the operation of the vehicle, as identified in the following table.

Visual Indicator	**Audible Alarm**	**Condition**
Back-Up	Backup Alarm	Reverse gear is selected
Hazard	Click	Four-way flashers activated
DRL	None	Daytime Running Lights
High Beam	None	Headlamp high beams activated
Kneel	Kneel Horn	Suspension kneeling system activated
Left Turn Signal	Click	Left turn signal activated
Parking Brake	None	Parking brake is activated
Rear Door	None	Rear passenger door is not closed and locked
Right Turn Signal	Click	Right turn signal activated
Stop Request	Chime	Passenger stop request has been activated
Wheelchair Request	Double Chime	Passenger wheelchair stop request has been activated

9.6.10. The instrument panel shall include an electronic speedometer indicating no more than 75 mph and calibrated in maximum increments of 5 mph.

9.6.11. The speedometer shall be a rotating pointer type, with a dial deflection of 220 to 270 degrees and 40 mph near the top of the dial. The speedometer shall be sized and accurate in accordance with SAE Recommended Practice J678.

9.6.12. The speedometer gauge shall incorporate an information display that contains a voltmeter(s), a trip odometer, average fuel consumption, engine, transmission and ABS error codes, engine parameters, brake wear indicators and multiplexing first level diagnostics.

9.6.13. The speedometer shall be equipped with an electronic odometer with a capacity reading no less than 999,999 miles.

9.6.14. The bus shall be equipped with an onboard computer capable of performing high level diagnostics and shall allow a technician to perform all tests that would otherwise require a separate laptop. This shall eliminate the need for CTC to purchase any additional diagnostic software/equipment.

9.6.15. The bus shall be equipped with a hubodometer mounted at the curbside of the rear axle. The hubodometer shall have a capacity reading no less than 999,999 miles.

9.6.16. The instrument panel shall also include air brake reservoir pressure gauge(s) with indicators for primary and secondary air tanks.

9.6.17. 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.

9.6.18. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

9.7. VISUAL AND AUDIBLE ALARMS

9.7.1. 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.

9.7.2. The indicator panel shall be located in 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.

9.7.3. 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.

9.7.4. Wherever possible, sensors shall be of the closed circuit type, so that failure of the circuit and/or sensor shall activate the malfunction indicator.

9.7.5. 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.

9.7.6. Malfunction and other indicators listed in the following table shall be supplied on all buses.

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

9.8. **WINDSHIELD WIPERS**

9.8.1. The bus shall be equipped with variable speed synchronized windshield wipers. A variable intermittent feature shall be provided to allow adjustment of wiper speed ranging approximately 5 to 50 cycles per minute. No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms.

9.8.2. At 60 mph, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift.

9.8.3. Both wipers shall park along the edges of the windshield glass that contains a heat grid for wiper defrosting.

9.8.4. Wiper defroster shall be automatically controlled.

9.8.5. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service and shall be removable as complete units.

9.8.6. The fastener that secures the wiper arm to the drive mechanism shall be corrosion resistant.

9.9. **WINDSHIELD WASHERS**

9.9.1. The windshield washer system shall deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiped area. Windshield washer system shall be powered by a 24v pump.

9.9.2. The windshield washer system shall have a minimum 10.5 gallon reservoir, located for easy refilling from outside of the bus. Reservoir pumps, lines, and fittings shall be corrosion-resistant, and the reservoir itself shall be translucent for easy determination of fluid level.

9.10. OPERATOR'S SEAT

Shall be USSC 9100ALX air suspension seat.

9.11. MIRRORS

9.11.1. EXTERIOR MIRRORS

9.11.2. The bus shall be equipped with ROSCO corrosion-resistant, outside rearview mirror on each side of the bus. Mirrors shall permit the operator to view the roadway along both sides of the bus, including the rear wheels. The curbside rearview mirror shall be mounted so that its lower edge is no less than 77 inches above the street surface.

9.11.3. The bus shall be equipped with 2 outside mirrors of unit magnification (flat), each with not less than 50 sq. in. of reflective surface. The mirrors shall be corrosion-resistant and be installed with stable supports on each side of the bus.

9.11.4. 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.

9.11.5. The roadside rearview mirror shall be mounted lower on the bus body so that the operator's line of sight is not obstructed.

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

9.11.7. 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.

9.12. INTERIOR MIRRORS

Mirrors shall be provided for the operator to observe passengers throughout the bus without leaving his 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

10. WINDOWS

10.1. GENERAL

A minimum of 10,000 square inches of window area, including operator and door windows, shall be required on each side of the standard configuration bus.

10.2. WINDSHIELD

10.2.1. The windshield shall be a single piece glass panel. The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 15 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3-1/2 feet high no more than 2 feet in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight.

10.2.2. 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.

10.2.3. The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. The windshield glazing material shall have a 1/4-inch or 6-mm nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673. The glazing material shall have single density tint. The upper portion of the windshield above the operator's field of view shall have a dark, shaded band with a minimum luminous transmittance of 6 percent when tested in accordance to ASTM D-1003.

10.3. OPERATOR'S SIDE WINDOW

10.3.1. 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.

10.3.2. The operator's view, perpendicular through operator's side window glazing, should extend a minimum of 33 inches to the rear of the Heel Point on the accelerator, and in any case must accommodate a 95^{th} percentile male operator.

10.3.3. The view through the glazing at the front of the assembly should begin not more than 22 inches above the operator's floor to ensure visibility of an under-mounted convex mirror. Operator's window construction shall maximize ability for full opening of the window

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

10.4. SIDE WINDOWS

10.4.1. CONFIGURATION

10.4.1.1. All side windows shall be fixed in position, except as necessary to meet the emergency escape requirements.

10.4.1.2. Each openable side window (top tip-in) shall incorporate an upper transom portion. The transom shall be 25 percent of the total window area The lower portion of the window shall be fixed. The transom portion shall be hinged along the lower edge and open inward.

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

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

10.4.2. MATERIALS

10.4.2.1. Side windows glazing material shall have ¼-inch nominal thickness laminated safety glass. The material shall conform to applicable requirements of ANSI Z26.1 and the Recommended Practices defined in SAE J673.

10.4.2.2. Windows on the bus sides and in the rear door shall be tinted a neutral color, complementary to the bus exterior. The maximum solar energy transmittance shall not exceed 37 percent, as measured by ASTM E-424, and the luminous transmittance shall be no less than 16 percent as measured by ASTM D-1003. Windows over the destination signs shall not be tinted.

10.4.3. REAR WINDOW

A rear window shall be provided. The rear window shall be glazed with same material and tint as side windows. The glazing shall be set in rubber channels type to meet FMVSS 217.

11. HEATING VENTILATING AND AIR CONDITIONING

11.1. CAPACITY AND PERFORMANCE

11.1.1. The Heating, Ventilation and Air Conditioning (HVAC) climate control system shall be capable of maintaining the interior of the bus at the temperature and humidity levels suitable for climate conditions found in the continental United States.

11.1.2. The HVAC unit shall be roof-mounted. The HVAC unit shall be Carrier RF353

11.1.3. The type of Freon used shall be R134A or R407c.

11.1.4. Accessibility and serviceability of components shall be provided without requiring maintenance personnel to climb-up on the roof of the bus.

11.2. CONTROLS AND TEMPERATURE UNIFORMITY

11.2.1. 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.

11.2.2. The climate control system shall be fully automatic and control the interior average temperature to within $\pm 2^{o}F$ of specified temperature control set-point.

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

11.3. AIR FLOW

11.3.1. PASSENGER AREA

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

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

11.3.1.3. The air shall be composed of no less than 20 percent outside air.

11.4. OPERATOR'S AREA

11.4.1. The bus interior climate control system shall deliver at least 150 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.

11.4.2. Airflow in the heating mode shall be reduced proportionally to the reduction of airflow into the passenger area.

11.4.3. 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.

11.4.4. The defroster or interior climate control system shall maintain visibility through the operator's side window.

11.5. CONTROLS FOR THE CLIMATE CONTROL SYSTEM (CCS)

11.5.1. The controls for the operator's compartment for heating, ventilation, and cooling systems shall be integrated and shall meet the following requirements**.**

11.5.1.1. The heat/defrost system fan shall be controlled by a separate switch that has an "Off" position and 3 speeds. All switches and controls shall preclude the possibility of clothing becoming entangled and shields shall be provided, if required. If the fans are approved by the Procuring Agency, an "On-Off" switch shall be located to the right of or near the main Defroster switch.

11.5.1.2. A manually operated control valve shall control the coolant flow through the heater core.

11.5.1.3. If a cable operated manual control valve is used, the cable length shall be kept to a minimum to reduce cable seizing.

11.5.1.4. Heater water control valves shall be "positive" type, closed or open. The method of operating remote valves shall require the concurrence of the CTC Director.

11.6. OPERATOR'S COMPARTMENT REQUIREMENTS

11.6.1. 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:

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

11.6.1.2. 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. Vents shall be provided at the left of the operator's position to allow direction of air onto the side windows. 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

11.6.1.3. 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.

11.7. **OPERATOR'S COOLING**

A separate fan unit shall provide 150 cfm of cool ducted air from the central cooling unit system to the operator's area through directionally adjustable nozzles and a variable speed fan control, both of which shall be located above and ahead of the operator**.**

11.8. **AIR FILTRATION**

Air shall be filtered before discharge into the passenger compartment. The filter shall meet the ANSI/ASHRAE 52.1 requirement for 5 percent or better atmospheric dust spot efficiency, 50 percent weight arrestance, and a minimum dust holding capacity of 120 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. All air filters shall be cleanable.

11.9. **ROOF VENTILATORS**

11.9.1. Two roof ventilators shall be provided in the roof of the bus, one approximately over or just forward of the front axle and the other, approximately over the rear axle.

11.9.2. Each ventilator shall be electrically opened and closed. When open with the bus in motion, this ventilator shall provide fresh air inside the bus. Ventilator shall cover an opening area no less than 425 square inches and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4 inches, or with all four edges raised simultaneously to a height of no less than 3-1/2 inches. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed.

11.10. MAINTAINABILITY

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

11.11. ENTRANCE/EXIT AREA HEATING

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

11.12. FLOOR LEVEL HEATING

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.

12. SIGNAGE AND COMMUNICATION

12.1. DESTINATION SIGNS

12.1.1. A Twin Vision destination sign system compatible with CTC's existing Elyse software shall be furnished on the front, on the right side near the front door, and on the rear of the vehicle.

12.1.2. 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 within 30 minutes. Parts shall be commercially available.

12.1.3. 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 mounted in such a manner that will not pose any safety hazard.

12.1.4. The destination sign compartments shall be designed to meet the following minimum requirements:

12.1.4.1. Prevent condensation and entry of moisture and dirt.

12.1.4.2. Prevent fogging of both compartment window and glazing on unit itself.

12.1.4.3. Access shall be provided to allow cleaning of inside compartment window and unit glazing.

12.1.4.4. Front window shall have an exterior display area of no less than 15"h by 85"w

12.1.4.5. Front window glass shall be electrically heated to prevent fog and/or ice buildup.

12.2. PASSENGER INFORMATION AND ADVERTISING

12.2.1. PASSENGER STOP REQUEST/EXIT SIGNAL

12.2.1.1. 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 cables, chime, and interior sign message.

12.2.1.2. The pull cables shall be no greater than 65 inches as measured from floor surface. It shall be easily accessible to all passengers, seated or standing. Pull cables shall activate a solid state or magnetic proximity switch(es).

12.2.1.3. 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.

12.2.1.4. Exit signals located in the wheelchair parking area shall be no higher than 4 feet above the floor. Instructions shall be provided to clearly indicate function and operation of these signals.

12.2.1.5. 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.

13. ELECTRICAL AND ELECTRONIC SYSTEMS

13.1. MODULAR DESIGN

13.1.1. Design of the electrical, electronic and data communication systems shall be modular so that each major component, apparatus panel, or wiring bundle is easily separable with standard hand tools or by means of connectors. Each module, except the main body wiring harness, shall be removable and replaceable in less than 30 minutes.

13.1.2. Power plant wiring shall be an independent wiring module. Replacement of the engine compartment wiring module(s) shall not require pulling wires through any bulkhead or removing any terminals from the wires.

13.2. ENVIRONMENTAL AND MOUNTING REQUIREMENTS

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

13.2.2. 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.

13.2.3. No vehicle component shall generate, or be affected by, electromagnetic interference or radio frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment as defined in SAE J1113.

13.3. MOUNTING

13.3.1. All electrical/electronic hardware shall be accessible and replaced in 30 minutes. It shall be mounted on an insulating panel to facilitate replacement.

13.3.2. 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.

13.3.3. 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.

13.3.4. 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.

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

13.4. GENERAL ELECTRICAL REQUIREMENTS

13.4.1. BATTERIES

13.4.1.1. MAIN POWER SUPPLY

13.4.1.1.1. The system shall supply a nominal 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.

13.4.1.1.2. Two 8D battery units conforming to SAE Standard J537 shall be provided. Each battery shall have a minimum of 1150 cold cranking amps. Each battery shall have a purchase date no more than 120 days from date of release, and shall be fully maintained prior to shipment to the Clermont Transportation Connection (CTC).

13.4.1.1.3. The voltage supplied shall be 24 Volts. Two batteries shall connected in series and the supply 12 Volts shall be achieved through the use of a converter (tension divider) of Surepower mark no. 52304 with entry at 24 Volts and exit with 13.5 Volts @ 40 Amps maximum.

13.4.1.1.4. Positive and negative terminal ends on the Baseline 8D batteries shall have different size studs to prevent incorrect installation. 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.

13.4.1.1.5. 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.

13.4.1.1.6. Jump-start connector with a direct connection to the engine starter shall be provided in the engine compartment equipped with dust cap and adequately protected from moisture, dirt and debris.

13.4.1.2. **MASTER BATTERY SWITCH**

13.4.1.2.1. Turning the master switch "OFF", with the power plant operating, shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load.

13.4.1.2.2. The batteries shall be equipped with a single switch for disconnecting both 12V & 24V power.

13.4.2. **POWER GENERATION AND DISTRIBUTION**

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

13.4.2.2. Alternator over-voltage output protection shall be provided.

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

13.4.2.4. The voltage regulator shall be located near the batteries and shall be Transtech REG24T.

13.4.3. **CIRCUIT PROTECTION**

13.4.3.1. All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by circuit breakers or fuses sized to the requirements of the load. Electronic circuit protection for the cranking motor shall be provided to prevent engaging of the motor for no

more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. Any manually re-settable circuit breakers shall provide visible indication of open circuits.

13.4.3.2. Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load current. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used. Wire and cable ampacity for wire sizes 18 AWG and larger shall be in accordance with the Wire Ampacity Chart.

13.4.4. **GROUNDS**

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four ground 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.

13.4.5. **WIRING AND TERMINALS**

13.4.5.1. 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.

13.4.5.2. Wiring shall be grouped, numbered, and color-coded. Color coding shall be:

Red	24 Volts Circuit
Yellow	12 Volts Circuit
Black	Ground
White	Controls, inputs, transmission and motor signals
Grey	Accessories and spares

13.4.5.3. 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.

13.4.5.4. 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.

13.4.5.5. 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.

13.4.5.6. All wiring harnesses over five feet long and containing at least five wires shall include 10 percent (minimum one [1]) excess wires for spares. This requirement for spare wires does not apply to data links and/or communication cables. Wiring length shall allow end terminals to be replaced three (3) times without pulling, stretching, or replacing the wire.

13.4.5.7. Except for large wires such as battery cables, terminals shall be crimped according to connector manufacturers 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.

13.4.5.8. 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.

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

13.4.5.10. 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.

13.5. ELECTRICAL COMPONENTS

13.5.1. 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.

13.5.2. All electric motors shall be heavy-duty brushless type except the wheelchair ramp pump, windshield wiper motor and fuel pump. All electric motors shall be easily accessible for servicing.

13.5.3. ELECTRICAL COMPARTMENTS

13.5.3.1. All relays, controllers, flashers, circuit breakers, and other electrical components shall be mounted in easily accessible electrical compartments.

13.5.3.2. 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.

13.5.3.3. The front compartment shall be completely serviceable from the operator's seat, vestibule, or from outside. A rear start and run control box shall be mounted in an accessible location in the engine compartment. The rear run control box shall incorporate a tachometer and an electronic information center displaying: voltmeter(s), odometer, engine, transmission and ABS error codes, engine parameters, brake wear indicators and multiplexing first level diagnostics.

13.6. GENERAL ELECTRONIC REQUIREMENTS

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

13.6.2. 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.

13.6.3. WIRING AND TERMINALS

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

13.6.4. DISCRETE I/O (INPUTS/OUTPUTS)

All wiring to I/O devices, either at the harness level or individual wires, shall be stamped every 2 inches in a fashion that allows unique identification. Labels shall be resistant to rubbing. 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. Harnesses, wire and cables delivered from certain component suppliers are excluded.

13.6.5. SHIELDING

All wiring that requires shielding shall meet the following minimum requirements.

13.6.5.1. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis.

13.6.5.2. 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.*

13.6.5.3. 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.

13.7. COMMUNICATIONS

The data network cabling shall be selected and installed according to the selected protocol requirements. The physical layer of all network communication systems shall not be used for any other purpose other than communication between the system components, unless provided for in the network specifications. Communications networks that use power line carriers (e.g. data modulated on a 24V-power line) shall meet the most stringent applicable wiring and terminal specifications.

13.8. RADIO FREQUENCY (RF)

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc, shall use coaxial cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss, 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.

13.9. AUDIO

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

13.10. MULTIPLEXING

13.10.1. GENERAL

13.10.1.1. 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.

13.10.1.2. 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.

13.10.1.3. 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. Multiplex modules shall be auto-programmable.

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

13.10.2. SYSTEM CONFIGURATION

Multiplexing shall be distributed. A distributed system shall process information on multiple control modules within the network. I/0 modules shall be located as close as possible to the components they control in order to reduce cable length.

13.10.3. I/O (INPUT/OUTPUT) SIGNALS

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

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

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

14. DATA COMMUNICATIONS SYSTEMS

14.1. GENERAL

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

14.1.1.1. Protocol requirements for all timing issues (bit, byte, packet, inter-packet timing, idle line timing, etc.) packet sizes, error checking, and transport (bulk transfer of data to/from the device)

14.1.1.2. Data definition requirements that ensure access to diagnostic information and performance characteristics

14.1.1.3. The capability and procedures for uploading new application or configuration data

14.1.1.4. Access to revision levels of data, application software and firmware

14.1.1.5. The capability and procedures for uploading new firmware or application software

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

14.2. DRIVETRAIN LEVEL

14.2.1. GENERAL

Drivetrain components, consisting of the engine, transmission, retarder, anti-lock braking system, and all other related components shall communicate data using a combination of the SAE Recommended Communications Protocols J1939 and/or J1708/J1587, or other open protocols.

14.2.2. **DIAGNOSTICS & FAULT DETECTION**

14.2.2.1. Drivetrain performance, maintenance and diagnostic data, and other electronic messages shall be formatted and transmitted on the communications networks.

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

14.2.3. **PROGRAMMABILITY (SOFTWARE)**

The Drivetrain Level components shall be programmable by the Procuring Agency with limitations as specified by the sub-system supplier.

14.3. **MULTIPLEX LEVEL**

14.3.1. **DATA ACCESS**

At a minimum, information shall be made available via a hardware gateway on the multiplex system. This gateway shall be in the form of an LCD screen mounted on the dash, this will provide all the required access and trouble shooting that can be accomplished and shall eliminate the need for the Clermont Transportation Connection to procure a laptop or other diagnostic software/hardware.

14.3.2. **DIAGNOSTICS AND FAULT DETECTION**

14.3.2.1. The multiplex system shall have incorporate on board diagnostic screen integrated in the driver information display that will enable to determine is all I/O modules are online.

14.3.2.2. In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via the on board computer. The unit shall have the ability to check logic function. The diagnostic data can be incorporated into the Information Level Network.

14.3.3. **PROGRAMMABILITY (SOFTWARE)**

14.3.3.1. The multiplex system shall have security provisions to protect its software from unwanted changes. This shall be achieved through limited access to the programming tools required to change the software, and hardware protection that prevents undesired changes to the software.

14.3.3.2. Provisions for programming the multiplex system shall be possible through a PC/laptop. 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.

AMENDMENT PAGE

The undersigned acknowledges receipt of the following amendments to the Documents.

(Give Number and date of each):

Amendment No._____ Dated_____

Amendment No._____ Dated_____

Amendment No._____ Dated_____

Amendment No._____ Dated_____

Amendment No._____ Dated_____

Failure to acknowledge receipt of all amendments may cause the bid to be considered non-responsive to the Invitation, which will require rejection of bid.

_____
Signature

_____
Title

SECTION 6: BID PROPOSAL FORM & CONTRACT

BID PROPOSAL FORM

The undersigned hereby proposes to furnish and deliver one (1) Heavy Duty Transit Bus for the Clermont Transportation Connection

In making this proposal, the undersigned represents that he has reviewed the advertisement for bids, the bid specifications, and all related contract documents

The undersigned further represents that the price as stated herein includes all risk of delay, from all causes whatsoever, all labor, material and transportation or other work, tools, equipment and expenses of whatever nature necessary or incidental to the performance, completion or maintenance of the work specified in a reasonable and workmanlike manner.

INDIVIDUAL VEHICLE PRICE	$_____
TOTAL CONTRACT PRICE	$_____
ESTIMATED DELIVERY DATE	_____
YEAR 1 (2010) INDIVIDUAL VEHICLE PRICE	$_____
YEAR 2 (2011) INDIVIDUAL VEHICLE PRICE	$_____
YEAR 3 (2012) INDIVIDUAL VEHICLE PRICE	$_____
YEAR 4 (2013) INDIVIDUAL VEHICLE PRICE	$_____
YEAR 5 (2014) INDIVIDUAL VEHICLE PRICE	$_____

For the Clermont Transportation Connection to possibly utilize the options in this contract a price MUST be entered in each space. **Failure to enter a price will not allow the future use of options.** The FTA requires that all prices be reviewed at the time of original contract award. Percentages based on PPI or any other incremental increase will not be accepted, bidders must provide a number which can be evaluated. This price may be re-evaluated at the time of option award and is may be changed with justification and approval from the Clermont Transportation Connection.

BIDDER: _____

ADDRESS: _____

_____

BY: _____
(Print Name and Sign)

TITLE: _____

DATE: _____

CLERMONT TRANSPORTATION CONNECTION
CLERMONT COUNTY, OHIO
CONTRACT FOR HEAVY DUTY TRANSIT BUS

THIS AGREEMENT, is entered into this _____ day of _____, 20___, by and between Clermont County, Ohio acting through its Board of County Commissioners, hereinafter called "County" and

_____, whose business address is

_____ hereinafter called "Contractor."

WHEREAS, the County desires to purchase HEAVY DUTY TRANSIT BUS for the Clermont Transportation Connection and has pursuant to the Ohio Revised Code, submitted the specifications therefore for public bid and has received bids and previously determined that the bid response of the Contractor is the lowest and best bid; and

WHEREAS, the Contractor is a company recognized and experienced in providing items described in the specifications;

NOW THEREFORE, in consideration of the payments to be made by the County to the Contractor and of the mutual covenants and promises contained herein, the parties hereby agree as follows:

1. Contractor shall provide HEAVY DUTY TRANSIT BUS for the Clermont Transportation Connection at the total price stated in their bid dated _____ attached hereto and incorporated herein by reference.

2. Contractor shall comply with all the terms and conditions of the specifications and other contract documents which are likewise incorporated herein as if same were fully rewritten.

3. Contractor warrants that the equipment, as delivered, will function in accordance with the specifications.

4. The Contractor agrees to deliver the HEAVY DUTY TRANSIT BUS within three hundred sixty (360) days from date of bid award. The County agrees to pay the proposal price within thirty days of receipt of the invoice.

5. Contractor agrees that the above referenced compensation shall be full and complete compensation and shall reflect and be inclusive of any risk of delay from all causes whatsoever, shall further include all transportation/delivery and any other incidental expenses of whatsoever nature which may be necessary.

6. In case of default by the Contractor in any of the provisions of the Contract, the Board of County Commissioners may procure the articles from other sources and hold the Contractor responsible for any excess costs incurred thereby.

7. This Contract shall be governed in accordance with the laws of the State of Ohio.

8. Contractor hereby agrees to indemnify and hold the County harmless from any claims, demands or losses of any type or nature to any person, bidder or corporation arising in any manner from the contractor's performance or failure to perform the work required under this contract and shall pay any judgment or liability obtained or growing out of said claims, liabilities or judgments, including reasonable attorney's fees and costs.

9. This Contract contains all the Agreements and representations between the parties and no modification, expressed or implied shall be effective unless agreed to in writing and executed by the parties hereto.

IN WITNESS WEREOF, the parties have hereunto caused this Contract to be executed by their appointed representatives on this _____ day of _____ 20___, with the intent to be legally bound thereby.

BY: BOARD OF COUNTY COMMISSIONERS
CLERMONT COUNTY, OHIO

ATTEST:

_____
Judith Kocica, Clerk
Board of County Commissioners

_____
Robert L. Proud

_____
Edwin H Humphrey

_____
R. Scott Croswell, III

WITNESS:

_____
(Signature)

_____
(Signature)

CONTRACTOR:

_____
(Signature)

_____
Typed Name

_____
(Title)

Approved as to form by the
Office of the Prosecuting Attorney,
Clermont County, OH

BY:_____

Date:_____