STATE OF TEXAS §
§
COUNTY OF FORT BEND §

AGREEMENT FOR PURCHASE OF TRANSIT VEHICLES
PURSUANT TO RFP 22-034

THIS AGREEMENT is made and entered into by and between Fort Bend County, (hereinafter "County"), a body corporate and politic under the laws of the State of Texas, and Creative Bus Sales, Inc. (hereinafter "Contractor"), a company authorized to conduct business in the State of Texas.

W I T N E S S E T H

WHEREAS, County desires that Contractor provide transit vans and buses from 1 to 50 vans and 2 to 80 buses, which meet or exceed the specifications contained in Attachment A (hereinafter "Services") pursuant to RFP 22-034; and

WHEREAS, Contractor represents that it is qualified and desires to perform such Services; and

WHEREAS, Contractor understands and acknowledges that this Agreement may be totally or partially funded with federal and or state funds;

NOW, THEREFORE, in consideration of the mutual covenants and conditions set forth below, the parties agree as follows:

AGREEMENT

Section 1. Scope of Services:

1.1. Contractor shall render Services to County as defined in the Scope of Services (attached hereto as Attachment A) which includes the Contractor's Response to the Request for Proposal ("Contractor's Response") and Exhibits I-III "Approved Vehicle Specifications and Pricing Sheets".

1.2. Contractor agrees that a "Service Event" includes delivery and acceptance of each manufactured vehicle and associated data deliverables including approval of all required documentation. The County reserves the right to have any and all documentation audited by a third party.

Section 2. Personnel

2.1 Contractor represents that it presently has, or is able to obtain, adequate qualified personnel in its employment for the timely performance of the services required under this

Agreement and that Contractor shall furnish and maintain, at its own expense, adequate and sufficient personnel, in the opinion of County, to perform the services when and as required and without delays.

2.2 All employees of Contractor shall have such knowledge and experience as will enable them to perform the duties assigned to them. Any employee of Contractor who, in the opinion of County, is incompetent or by his conduct becomes detrimental to the project shall, upon request of County, immediately be removed from association with the project.

Section 3. Compensation and Payment

3.1 Contractor's fees shall be calculated at the rates set forth in Attachment A. The Maximum Compensation for contract services is twenty-six million, one thousand, seven hundred ninety dollars and no/100 ($26,001,790.00). In no case shall the amount paid by County per Service Event under this Agreement exceed the Maximum Compensation without an approved change order.

3.2 Contractor understands and agrees that the Maximum Compensation stated is an all-inclusive amount and no additional fee, cost or reimbursed expense shall be added whatsoever to the fees stated in the Attachment A.

3.3 All performance of the services by Contractor including any changes in the services and revision of work satisfactorily performed will be performed only when approved in advance and authorized by County.

3.4 County will pay Contractor based on the following procedures: Upon completion of each Service Event, Contractor shall submit to County two (2) original copies of invoices showing the amounts due for Services performed in a form acceptable to County. Contractor may submit electronically via: apauditor@fbctx.gov. County shall review such invoices and approve them within 30 calendar days with such modifications as are consistent with this Agreement and forward same to the Auditor for processing. County shall pay each such approved invoice within thirty (30) calendar days. County reserves the right to withhold payment pending verification of satisfactory work performed.

Section 4. Limit of Appropriation

4.1 Contractor clearly understands and agrees, such understanding and agreement being of the absolute essence of this Agreement, that County shall have available the total maximum sum of twenty-six million, one thousand, seven hundred ninety dollars and no/100 ($26,001,790.00) specifically allocated to fully discharge any and all liabilities County may incur.

4.2 Contractor does further understand and agree, said understanding and agreement also being of the absolute essence of this Agreement, that the total maximum compensation that Contractor may become entitled to and the total maximum sum that County may become liable to pay to Contractor shall not under any conditions, circumstances, or interpretations thereof

exceed twenty-six million, one thousand, seven hundred ninety dollars and no/100 ($26,001,790.00).

4.3 It is specifically understood and agreed that in the event no funds or insufficient funds are appropriated by County under this Agreement, County shall notify all necessary parties that this Agreement shall thereafter terminate and be null and void on the last day of the fiscal period for which appropriations were made without penalty, liability or expense to County.

Section 5. Time of Performance or Term

The original term of this Agreement will begin upon execution by County and end September 30, 2023. Thereafter this Agreement shall renew annually automatically for a period of time not to exceed a total of four years (ending September 30, 2027), unless sooner terminated as provided herein.

Section 6. Modifications and Waivers

6.1 The parties may not amend or waive this Agreement, except by a written agreement executed by both parties.

6.2 No failure or delay in exercising any right or remedy or requiring the satisfaction of any condition under this Agreement, and no course of dealing between the parties, operates as a waiver or estoppel of any right, remedy, or condition.

6.3 The rights and remedies of the parties set forth in this Agreement are not exclusive of, but are cumulative to, any rights or remedies now or subsequently existing at law, in equity, or by statute.

Section 7. Termination

7.1 Termination for Convenience

7.1.1 County may terminate this Agreement at any time upon thirty (30) days written notice issued by the County Judge or the Department Director.

7.2 Termination for Default

7.2.1 County may terminate the whole or any part of this Agreement for cause in the following circumstances:

7.2.1.1 If Contractor fails to perform services within the time specified in the Section 5 or any extension thereof granted by the County in writing;

7.2.1.2 If Contractor materially breaches any of the covenants or terms and conditions set forth in this Agreement or fails to perform any of the other provisions of this Agreement or so fails to make progress as to endanger performance of this Agreement in accordance with its terms, and in any of these circumstances does not cure such breach or failure

to County's reasonable satisfaction within a period of ten (10) calendar days after receipt of notice from County specifying such breach or failure.

7.2.2 If, after termination, it is determined for any reason whatsoever that Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the County in accordance with Section 7.1 above.

7.3 Upon termination of this Agreement, County shall compensate Contractor in accordance with Section 3, above, for those services which were provided under this Agreement prior to its termination and which have not been previously invoiced to County. Contractor's final invoice for said services will be presented to and paid by County in the same manner set forth in Section 3 above.

7.4 If County terminates this Agreement as provided in this Section, no fees of any type, other than fees due and payable at the Termination Date, shall thereafter be paid to Contractor.

Section 8. Ownership and Reuse of Documents

All documents, data, reports, research, graphic presentation materials, etc., developed by Contractor as a part of its work under this Agreement, shall become the property of County upon completion of this Agreement, or in the event of termination or cancellation thereof, at the time of payment under Section 3 for work performed. Contractor shall promptly furnish all such data and material to County on request.

Section 9. Inspection of Books and Records

Contractor will permit County, or any duly authorized agent of County, to inspect and examine the books and records of Contractor for the purpose of verifying the amount of work performed by Contractor. County's right to inspect survives the termination of this Agreement for a period of four years.

Section 10. Insurance

Prior to commencement of the Services, Contractor shall furnish County with properly executed certificates of insurance which shall evidence all insurance required and provide that such insurance shall not be canceled, except on 30 days' prior written notice to County. Contractor shall provide certified copies of insurance endorsements and/or policies if requested by County. Contractor shall maintain such insurance coverage from the time Services commence until Services are completed and provide replacement certificates, policies and/or endorsements for any such insurance expiring prior to completion of Services. Contractor shall obtain such insurance written on an Occurrence form from such companies having Bests rating of A/VII or better, licensed or approved to transact business in the State of Texas, and shall obtain such insurance of the following types and minimum limits:

1. Workers Compensation in accordance with the laws of the State of Texas. Substitutes to genuine Workers' Compensation Insurance will not be allowed.

2. Employers' Liability insurance with limits of not less than $1,000,000 per injury by accident, $1,000,000 per injury by disease, and $1,000,000 per bodily injury by disease.

3. Commercial general liability insurance with a limit of not less than $1,000,000 each occurrence and $2,000,000 in the annual aggregate. Policy shall cover liability for bodily injury, personal injury, and property damage and products/completed operations arising out of the business operations of the policyholder.

4. Business Automobile Liability coverage applying to owned, non-owned and hired automobiles with limits not less than $1,000,000 each occurrence combined single limit for Bodily Injury and Property Damage combined.

Section 11. Indemnity

CONTRACTOR SHALL INDEMNIFY AND DEFEND COUNTY AGAINST ALL LOSSES, LIABILITIES, CLAIMS, CAUSES OF ACTION, AND OTHER EXPENSES, INCLUDING REASONABLE ATTORNEYS FEES, ARISING FROM ACTIVITIES OF CONTRACTOR, ITS AGENTS, SERVANTS OR EMPLOYEES, PERFORMED UNDER THIS AGREEMENT THAT RESULT FROM THE NEGLIGENT ACT, ERROR, OR OMISSION OF CONTRACTOR OR ANY OF CONTRACTOR'S AGENTS, SERVANTS OR EMPLOYEES. THE PARTIES AGREE THAT THIS INDEMNIFICATION PROVISION SHALL APPLY DURING THE PERFORMANCE OF SERVICES AS WELL AS DURING THE PERORMANCE OF ANY CONTINUING OBLIGATIONS THAT MAY EXIST (IF ANY) AFTER THE EXPIRATION OF THIS AGREEMENT.

Section 12. Confidential and Proprietary Information

12.1 Contractor acknowledges that it and its employees or agents may, in the course of performing their responsibilities under this Agreement, be exposed to or acquire information that is confidential to County. Any and all information of any form obtained by Contractor or its employees or agents from County in the performance of this Agreement shall be deemed to be confidential information of County ("Confidential Information"). Any reports or other documents or items (including software) that result from the use of the Confidential Information by Contractor shall be treated with respect to confidentiality in the same manner as the Confidential Information. Confidential Information shall be deemed not to include information that (a) is or becomes (other than by disclosure by Contractor) publicly known or is contained in a publicly available document; (b) is rightfully in Contractor's possession without the obligation of nondisclosure prior to the time of its disclosure under this Agreement; or (c) is independently developed by employees or agents of Contractor who can be shown to have had no access to the Confidential Information.

12.2 Contractor agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Contractor uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose Confidential Information to third parties or use Confidential Information for any purposes whatsoever other than the provision of services to County hereunder, and to advise each of its employees and agents of their obligations to keep Confidential Information confidential. Contractor shall use its best efforts to assist County in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limitation of the foregoing, Contractor shall advise County immediately in the event Contractor learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Agreement and Contractor will at its expense cooperate with County in seeking injunctive or other equitable relief in the name of County or Contractor against any such person. Contractor agrees that, except as directed by County, Contractor will not at any time during or after the term of this Agreement disclose, directly or indirectly, any Confidential Information to any person, and that upon termination of this Agreement or at County's request, Contractor will promptly turn over to County all documents, papers, and other matter in Contractor's possession which embody Confidential Information.

12.3 Contractor acknowledges that a breach of this Section, including disclosure of any Confidential Information, or disclosure of other information that, at law or in equity, ought to remain confidential, will give rise to irreparable injury to County that is inadequately compensable in damages. Accordingly, County may seek and obtain injunctive relief against the breach or threatened breach of the foregoing undertakings, in addition to any other legal remedies that may be available. Contractor acknowledges and agrees that the covenants contained herein are necessary for the protection of the legitimate business interest of County and are reasonable in scope and content.

12.4 Contractor in providing all services hereunder agrees to abide by the provisions of any applicable Federal or State Data Privacy Act.

12.5 Contractor expressly acknowledges that County is subject to the Texas Public Information Act, TEX. GOV'T CODE ANN. §§ 552.001 *et seq.*, as amended, and notwithstanding any provision in the Agreement to the contrary, County will make any information related to the Agreement, or otherwise, available to third parties in accordance with the Texas Public Information Act. Any proprietary or confidential information marked as such provided to County by Consultant shall not be disclosed to any third party, except as directed by the Texas Attorney General in response to a request for such under the Texas Public Information Act, which provides for notice to the owner of such marked information and the opportunity for the owner of such information to notify the Attorney General of the reasons why such information should not be disclosed. The terms and conditions of the Agreement are not proprietary or confidential information.

Section 13. Independent Contractor

13.1 In the performance of work or services hereunder, Contractor shall be deemed an independent contractor, and any of its agents, employees, officers, or volunteers performing work required hereunder shall be deemed solely as employees of Contractor or, where permitted, of its subcontractors.

13.2 Contractor and its agents, employees, officers, or volunteers shall not, by performing work pursuant to this Agreement, be deemed to be employees, agents, or servants of County and shall not be entitled to any of the privileges or benefits of County employment.

Section 14. Notices

14.1 Each party giving any notice or making any request, demand, or other communication (each, a "Notice") pursuant to this Agreement shall do so in writing and shall use one of the following methods of delivery, each of which, for purposes of this Agreement, is a writing: personal delivery, registered or certified mail (in each case, return receipt requested and postage prepaid), or nationally recognized overnight courier (with all fees prepaid).

14.2 Each party giving a Notice shall address the Notice to the receiving party at the address listed below or to another address designated by a party in a Notice pursuant to this Section:

County:	Fort Bend County Public Transportation Department Attn: Director 301 Jackson Street Richmond, Texas 77469
With a copy to:	Fort Bend County Attn: County Judge 401 Jackson Street, 1st Floor Richmond, Texas 77469
Contractor:	Creative Bus Sales, Inc. 14740 Ramona Ave. Chino, CA 91710

14.3 A Notice is effective only if the party giving or making the Notice has complied with subsections 14.1 and 14.2 and if the addressee has received the Notice. A Notice is deemed received as follows:

14.3.1 If the Notice is delivered in person, or sent by registered or certified mail or a nationally recognized overnight courier, upon receipt as indicated by the date on the signed receipt.

14.3.2 If the addressee rejects or otherwise refuses to accept the Notice, or if the Notice cannot be delivered because of a change in address for which no Notice was given, then upon the rejection, refusal, or inability to deliver.

Section 15. Compliance with Laws

Contractor shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of this Agreement, including, without limitation, Worker's Compensation laws, minimum and maximum salary and wage statutes and regulations, licensing laws and regulations. When required by County, Contractor shall furnish County with certification of compliance with said laws, statutes, ordinances, rules, regulations, orders, and decrees above specified.

Section 16. Performance Warranty

16.1 Contractor warrants to County that Contractor has the skill and knowledge ordinarily possessed by well-informed members of its trade or profession practicing in the greater Houston metropolitan area and Contractor will apply that skill and knowledge with care and diligence to ensure that the services provided hereunder will be performed and delivered in accordance with the highest professional standards.

16.2 Contractor warrants to County that the services will be free from material errors and will materially conform to all requirements and specifications contained herein.

16.3 Contractor acknowledges and fully understands the specifications and requirements listed in the attached Attachment B, which describes Creative Bus Sales Warranty Process. Contractor warrants to the County that services rendered will conform to all requirements listed in Attachment B.

16.4 Contractor acknowledges the specifications and requirements listed in Attachment C, which describes Creative Bus Sales Care Plan. Contractor warrants to the County that services rendered will conform to all requirements listed in Attachment C.

16.5 Contractor acknowledges the specifications and requirements listed in Attachment D, which describes Creative Bus Sales Warranty Terms. Contractor warrants to the County that services rendered will conform to all requirements listed in Attachment D.

Section 17. Assignment

17.1 Neither party may assign any of its rights under this Agreement, except with the prior written consent of the other party. That party shall not unreasonably withhold its consent. All assignments of rights are prohibited under this subsection, whether they are voluntarily or involuntarily, by merger, consolidation, dissolution, operation of law, or any other manner.

17.2 Neither party may delegate any performance under this Agreement.

17.3 Any purported assignment of rights or delegation of performance in violation of this Section is void.

Section 18. Applicable Law

The laws of the State of Texas govern all disputes arising out of or relating to this Agreement. The parties hereto acknowledge that venue is proper in Fort Bend County, Texas, for all legal actions or proceedings arising out of or relating to this Agreement and waive the right to sue or be sued elsewhere. Nothing in the Agreement shall be construed to waive the County's sovereign immunity.

Section 19. Successors and Assigns

County and Contractor bind themselves and their successors, executors, administrators and assigns to the other party of this Agreement and to the successors, executors, administrators and assigns of the other party, in respect to all covenants of this Agreement.

Section 20. Third Party Beneficiaries

This Agreement does not confer any enforceable rights or remedies upon any person other than the parties.

Section 21. Severability

If any provision of this Agreement is determined to be invalid, illegal, or unenforceable, the remaining provisions remain in full force, if the essential terms and conditions of this Agreement for each party remain valid, binding, and enforceable.

Section 22. Publicity

Contact with citizens of Fort Bend County, media outlets, or governmental agencies shall be the sole responsibility of County. Under no circumstances whatsoever, shall Contractor release any material or information developed or received in the performance of the services hereunder without the express written permission of County, except where required to do so by law.

Section 23. Additional Warranties

23.1 Pollution: Contractor certifies that the vehicle meets all Federal Noise and Exhaust emission standards.

23.2 Requirements: The manufacturer's standard warranty for body and chassis must be provided as well as warranty for rust-proofing and lift. Warranties must be effective the day the buyer receives and signs delivery acceptance.

23.3 Contractor acknowledges County's right to secure a third-party, independent inspector who shall be present during the build process. Contractor shall make all necessary changes as requested by County based on the inspector's findings and in accordance with Attachment A.

23.4 Open Architecture: Contractor must comply with all Federal, state and local requirements, standards and regulations as it relates to the system and subsystems, including, but not limited to fare boxes, destination signs, cameras, and AVL systems.

23.5 The manufacturer shall warrant all parts and labor for one year from the date of delivery with an extended warranty of five (5) years for the engine and transmission. The Contractor shall assume sole responsibility for the entire vehicle as to warranty and after-sales parts and service. This includes the pick-up and delivery of the vehicle.

23.6 Contractor must be able to provide warranty service for the vehicle in the area in which it is to be used. Contractors located outside this area must be able to arrange an agreement with one or more authorized distributors located within 50 miles of the service area or within Fort Bend County. This requirement is not meant to restrict responses but to ensure the availability of warranty services.

Section 24. Certifications

The Contractor agrees to abide by the certifications, acknowledgments and requirements included in Attachment A which includes Contractor's signed Certification Forms. Contractor shall include these requirements in each subcontract financed in whole or in part by this Agreement.

Section 25. Federal Clauses

Contractor understands and acknowledges that this Agreement may be totally or partially funded with federal and state funds. As a condition of receiving these funds, Contractor represents that it is and will remain in compliance with all federal and or state terms in this Section, as well as, all conditions, certifications, and acknowledgements included in Contractor's Response included in Attachment A. These terms flow down to all third party contractors and their subcontracts at every tier, unless a particular award term or condition specifically indicates otherwise. The Contractor shall require that these clauses shall be included in each covered transaction at any tier, unless a particular award term or condition specifically indicates otherwise.

25.1. Access for Individuals with Disabilities (ADA Access).

The Contractor and any subcontractor agrees to comply with 49 U.S.C. § 5301(d), which states the Federal policy that elderly individuals and individuals with disabilities have the same right as other individuals to use public transportation services and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities. The Contractor also agrees to comply with all applicable provisions of section 504 of the Rehabilitation Act of 1973, as amended, with 29 U.S.C. § 794, which prohibits discrimination on the basis of disability; with

the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 et seq., which requires that accessible facilities and services be made available to individuals with disabilities; and with the Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151 et seq., which requires that buildings and public accommodations be accessible to individuals with disabilities, and any subsequent amendments to these laws. In addition, the Contractor agrees to comply with applicable implementing Federal regulations and directives and any subsequent amendments thereto, as follows:

(1) U.S. DOT regulations, “Transportation Services for Individuals with Disabilities (ADA), 49 C.F.R. Part 37;
(2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in programs and Activities Receiving or Benefiting from Federal Financial Assistance, 49 C.F.R. Part 27;
(3) Joint U.S. Architectural and Transportation Barriers Compliance board (U.S. ATBCB)/U.S. DOT regulations, “Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38;
(4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35;
(5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36;
(6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;
(7) U.S. EEOC, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;
(8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F; and
(9) U.S. ATBCB regulations, “Electronic and Information Technology Accessibility Standards,” 36 C.F.R. Part 1194; FTA regulations, "Transportation for Elderly and Handicapped Persons”, 49 C.F.R. Part 609; and
(10) U.S. DOT regulations, “Transportation for Individuals with Disabilities: Passenger Vessels,” 49 C.F.R. Part 39;
(11) FTA Circular 4710.1, “Americans with Disabilities Act: Guidance”; and
(12) Federal civil rights and nondiscrimination directives implementing the foregoing regulations, except to the extent the Federal Government determines otherwise in writing.

25.2. Access to Records and Reports.

The Contractor agrees to provide County, 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 the Agreement 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. 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.

The Contractor agrees to comply and will require all subcontractors of any tier to comply with the record retention requirements in accordance with 2 C.F.R. 200.333. The Contractor agrees to retain, and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, all books, records, accounts, statistics, leases, subcontracts, arrangements other third party arrangements of any type, reports, and supporting materials related to those records required under the Agreement for a period of not less than three years after the date of termination or expiration of the Agreement, except in the event of litigation or settlement of claims arising from the performance of the Agreement, in which case Contractor agrees to maintain same until County, 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.

25.3. Breaches and Disputes.

The Contractor and the County shall attempt in good faith to resolve promptly any dispute arising out of or relating to the Agreement by negotiation between the parties. Disputes arising in the performance of this Agreement that are not resolved by agreement of the parties shall be decided in writing by the authorized representative of the County. This decision shall be final and conclusive unless within ten [10] days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the County. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the County shall be binding upon the Contractor and the Contractor shall abide by the decision. This clause shall flow-down to all subcontractors.

Performance During Dispute - Unless otherwise directed by County, Contractor shall continue performance under the Agreement while matters in dispute are being resolved.

The requirement to seek mediation may be a condition required before filing an action at law or in equity, unless to do so would prevent either party from seeking relief in a court of law or equity under any applicable statute of limitations.

Claims for Damages - Should either party to the Agreement suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury of damage.

Rights and Remedies - The duties and obligations imposed by the Agreement and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the County or Contractor shall constitute a waiver of any right or duty afforded any of

them under the Agreement, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

Contractor shall place this clause in all subcontracts for more than the small purchase currently set at $50,000 by the County, to address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

25.4. Bus Testing.

The Contractor [Manufacturer] agrees to comply with 49 U.S.C. A 5323(c) and FTA's implementing regulation at 49 CFR Part 665 and shall perform the following:

(1) A manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient which will be prior to the recipient's final acceptance of the first vehicle;
(2) A manufacturer who releases a report under paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public;
(3) If the manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the manufacturer shall provide a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing
(4) If the manufacturer represents that the vehicle is "grandfathered" (has been used in mass transit service in the United States before October 1, 1988, and is currently being produced without a major change in configuration or components), the manufacturer shall provide the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

25.5. Buy America.

The following clause only applies to contracts for $150,000 or more involving rolling stock or materials and supplies.

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

passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content, subject to the Amendment below.

The FAST Act, effective October 1, 2015 amended the Buy America waiver for rolling stock to provide for a phased increase in the domestic content requirement for rolling stock to more than 65 percent for FY2018 and FY2019 and to more than 70 percent in FY2020 and beyond. The new provisions apply based on the date of delivery of the rolling stock. Domestic content requirement over the phase of the contract period shall be the provision applicable to the year of delivery of rolling stock procured under this contract.

Unlike rolling stock, manufactured goods must be 100-percent produced in the U.S. A manufactured good is considered produced in the United States if: (1) All of the manufacturing processes for the product take place in the United States; and (2) All of the components of the product are of U.S. origin. A component is considered of U.S. origin if it is manufactured in the United States, regardless of the origin of its subcomponents. 49 CFR 661.5(d). FTA has issued a number of Buy America guidance letters discussing manufactured goods.

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

25.6. Cargo Preference-Use of United States-Flag Vessels.

The following clause only applies to contracts that involve transit by ocean for rolling stock or materials and supplies.

The Contractor and any subcontractor agrees: (a) to use privately owned US -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 Agreement to the extent such vessels are available at fair and reasonable rates for US-Flag commercial vessels; and (b) to furnish within 20 working days following the date of loading for shipments originating within the US or within 30 working days following the date of loading for shipments originating outside the US, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading).

25.7. Civil Rights Requirements.

The following clauses apply to all contractors and subcontractors.

Nondiscrimination in Federal Public Transportation Programs - 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, religion, national origin, sex, sexual orientation, gender identity, age, status as a parent or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

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

Race, Color, Creed, National Origin, Sex
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, disability, age, sexual orientation, gender identity, or status as a parent. 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.

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.

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.

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

25.8. Clean Air.

The following clause only applies to contracts of $150,000 or more.

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 County and understands and agrees that the County will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. The Contractor agrees it will not use any violating facilities. It will report the use of facilities placed on or likely to be placed on the U.S. EPA "List of Violating Facilities". It will report violations of use of prohibited facilities to FTA.

The Contractor also agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA.

25.9. Clean Water.

The following clause only applies to contracts of $150,000 or more.

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 County and understands and agrees that the County will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. The Contractor agrees it will not use any violating facilities. It will report the use of facilities placed on or likely to be placed on the U.S. EPA "List of Violating Facilities". It will report violations of use of prohibited facilities to FTA.

The Contractor also agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA.

25.10. Contract Work Hours and Safety Standards Act.

The following clause only applies to contracts of $100,000 or more involving rolling stock.

The Contractor shall comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701-3708), as supplemented by the DOL regulations at 29 C.F.R. part 5. Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations (29 C.F.R. part 5).

(1) Overtime requirements - No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages - In the event of any violation of the clause set forth in paragraph (1) of this section the Contractor and any

subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of $10 or the maximum allowed by law for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

(3) Withholding for unpaid wages and liquidated damages – County shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

(4) Subcontracts - The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

(5) Payrolls and basic records - Payrolls and related basic records shall be maintained by the Contractor during the course of the work and preserved for three years thereafter for all laborers and mechanics working at the worksite (or under the United States Housing Act of 1937 or the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address and social security number of each worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid.

Whenever the Secretary of Labor has found under 29 C.F.R. 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section

1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records showing that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and records of the costs anticipated or actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of registration of apprenticeship programs, certification of trainee programs, registration of the apprentices and trainees, and ratios & wage rates prescribed in applicable programs.

(6) The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence. A federally assisted construction contract must exceed $150,000 before these construction safety requirements apply to that contract.

25.11. Disadvantaged Business Enterprise (DBE).

The Agreement is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs including 49 C.F.R. Part 26, Section 1101(b) of the FAST Act (23 U.S.C. § 101 note). The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. **A separate contract goal has not been established for this procurement.** Contractor will facilitate, participation by small business concerns owned and controlled by socially and economically disadvantaged individuals, also referred to as "Disadvantaged Business Enterprises" (DBEs).

The Contractor, and each third party subcontractor must not discriminate on the basis of race, color, national origin, or sex in the award and performance of any FTA or U.S. DOT-assisted subagreement, third party contract, and third party subcontract, as applicable, and the administration of its DBE program or the requirements of 49 C.F.R. part 26.

The Contractor and each Third Party Subcontractor must take all necessary and reasonable steps under 49 C.F.R. part 26 to ensure nondiscrimination in the award and administration of U.S.FTA-assisted subagreements, third party contracts, and third party subcontracts, as applicable.

Failure by the Subrecipient and any of its Third Party Contractors or Third Party Subcontractors to carry out the requirements of this subparagraph 12.e(4)(b) is a material breach of this subagreement, third party contract, or third party subcontract, as applicable which may result in the termination of the Agreement or such other remedy as County deems appropriate, which may include, but is not limited to: (1) withholding monthly progress payments; (2) assessing sanctions; (3) liquidated damages; and/or (4) disqualifying the Contractor from future bidding as non-responsible. Each subcontract the Contractor signs with a subcontractor must include the assurance in this paragraph (see 49 C.F.R. 26.13(b)).

The successful bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.

The Contractor is required to pay its subcontractors performing work related to the Agreement for satisfactory performance of that work no later than 30 days after the Contractor's receipt of payment for that work from County. In addition, the Contractor is required to return any retainage payments to those subcontractors within 30 days after the subcontractor's work related to the Agreement is satisfactorily completed.

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

25.12. Distracted Driving.

The Contractor and any subcontractors agree to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contractor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the Award, or when performing any work for or behalf of the County.

25.13. Environmental Justice.

The Contractor and any subcontractors agree to, and assures that it will, promote environmental justice by following: (1) Executive Order No. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," February 11, 1994, 42 U.S.C. § 4321 note, as well as facilitating compliance with that Executive Order, (2) U.S. DOT Order 5610.2, "Department of Transportation Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," 62 Fed. Reg. 18377, April 15, 1997, and (3) the most recent edition of FTA Circular 4703.1, "Environmental Justice Policy Guidance for Federal Transit Administration Recipients," August 15, 2012, to the extent consistent with applicable federal laws, regulations, requirements, and guidance.

25.14. Environmental Protections.

The Contractor and any subcontractors agree to, and assures that it will, comply with all applicable environmental and resource use laws, regulations, and requirements, and follow applicable guidance, now in effect or that may become effective in the future, including state and local laws, ordinances, regulations, and requirements and follow applicable guidance.

25.15. Notice to Third Party Participants.

Federal requirements that apply to the County may change due to changes in federal law, regulation, other requirements, or guidance, or changes in the Recipient's Award Agreement including any information incorporated by reference and made part of that Award Agreement will apply to the Contractor and any other Third-Party Agreements.

25.16. Fly America.

The following clause only applies to contracts involving foreign air transportation or travel.

The Contractor and any subcontractors agree to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 C.F.R. 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.

25.17. FTA Interest.

This clause does not flow-down to subcontractors.

Contractor understands and agrees that FTA has a vested interest in the settlement of any violation of federal law, regulation, or disagreement involving federal funds used towards this Agreement, including, but not limited to, a default, breach, major dispute, or litigation, and FTA reserves the right to concur in any settlement or compromise."

25.18. Government-wide Debarment and Suspension.

The following clause only applies to contracts of $25,000 or more.

The Contractor and any subcontractors shall comply and facilitate compliance with U.S. FTA regulations, Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate

in this federally funded contract and are not presently declared by any Federal department or agency to be:

(1) Debarred from participation in any federally assisted Award;
(2) Suspended from participation in any federally assisted Award;
(3) Proposed for debarment from participation in any federally assisted Award;
(4) Declared ineligible to participate in any federally assisted Award;
(5) Voluntarily excluded from participation in any federally assisted Award; or
(6) Disqualified from participation in ay federally assisted Award.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

"The Certification in this clause is a material representation of fact relied upon by the County. If it is later determined by the County that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions."

25.19. Incorporation of FTA Terms.

The provisions in this Section include, in part, certain Standard Terms and Conditions required by FTA, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by FTA, 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 the Agreement. The Contractor and any subcontractors shall not perform any act, fail to perform any act, or refuse to comply with any County requests which would cause County to be in violation of the FTA terms and conditions.

25.20. Lobbying.

The following clause must be included in all subcontracts for $100,000 or more.

Contractors and any subcontractors who apply or bid for an award of $100,000 or who are awarded a contract for $100,000 or more shall file the certification required by 49 C.F.R. Part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or

award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the County.

25.21. No Government Obligation to Third Parties.

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

25.22. Notification to FTA.

Contractor understands that if a current or prospective legal matter that may affect the Federal Government emerges, the County must promptly notify the FTA Chief Counsel, or FTA Regional Counsel for the Region in which the County is located. (1) The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason. (2) Matters that may affect the Federal Government include, but are not limited to, the Federal Government's interests in the federal funds used towards this Agreement, or the Federal Government's administration or enforcement of federal laws, regulations, and requirements.

25.23. Duty to Report False Claims.

If the County has credible evidence that Contractor or other person has submitted a false claim under the False Claims Act, 31 U.S.C. § 3729 et seq., or has committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bribery, gratuity, or similar misconduct involving federal assistance, the County must promptly notify the U.S. FTA Inspector General, in addition to the FTA Chief Counsel or Regional Counsel for the Region in which the County is located.

25.24. Pre-Award and Post Delivery Audit.

Pre-Award and Post-Delivery Audit Requirements - The Contractor and any subcontractors agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

(1) Buy America Requirements: The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Bidder/Offeror certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including

a description of the activities that will take place at the final assembly point and the cost of final assembly.

(2) Solicitation Specification Requirements: The Contractor shall submit evidence that it will be capable of meeting the bid specifications.

(3) Federal Motor Vehicle Safety Standards (FMVSS): The Contractor shall submit 1) manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

25.25. Program Fraud and False or Fraudulent Statements and Related Acts.

The Contractor and any subcontractors acknowledge that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the 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 Agreement or the FTA assisted project for which the Agreement 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.

25.26. Prompt Payment.

Under this contract, the prime contractor agrees to pay each subcontractor for satisfactory performance of its contract within 30 days from the receipt of each payment the prime contractor receives from the County. The prime contractor further agrees to full payment of retainage to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may

occur only for good cause following written approval of the County. This clause applies to both DBE and non-DBE subcontracts.

25.27. Resource Recovery.

This clause only applies to procurements of $10,000 or more per year for items designated by EPA.

The Contractor and any subcontractors agrees to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

25.28. Safe Operation of Motor Vehicles (Seat Belt).

Contractor and any subcontractors shall encourage their employees and other personnel that operate company-owned vehicles, company rented-vehicles, or personally operated vehicles to adopt on-the-job seat belt policies and programs.

The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contractor owns, leases, or rents, or a privately-owned vehicle when performing any work for this Agreement.

25.29. Termination.

Contractor understands that all contracts in excess of $10,000, including subcontracts, must address termination for cause and for convenience by the Contractor including the manner by which it will be effected and the basis for settlement.

25.30. Transit Vehicle Manufacturer.

The Contractor and each third party subcontractor must not discriminate on the basis of race, color, national origin, or sex in the award and performance of any FTA or U.S. DOT-assisted subagreement, third party contract, and third party subcontract, as applicable, and the administration of its DBE program or the requirements of 49 C.F.R. part 26. The Contractor and each Third Party Subcontractor must take all necessary and reasonable steps under 49 C.F.R. part 26 to ensure nondiscrimination in the award and administration of U.S.FTA-assisted subagreements, third party contracts, and third party subcontracts, as applicable. Failure by the

Subrecipient and any of its Third Party Contractors or Third Party Subcontractors to carry out the requirements of this subparagraph is a material breach of this subagreement, third party contract, or third party subcontract, as applicable, and the following remedies, or such other remedy as the County deems appropriate, include, but are not limited to, withholding monthly progress payments; assessing sanctions; liquidated damages; and/or disqualifying the Subrecipient, Third Party Contractor, or Third Party Subcontractor from future bidding as non-responsible.

25.31. Change Orders.

Verbal change orders to the Agreement are not permitted. No changes in the scope, specifications, character, or complexity of work shall be made by the Contractor without first receiving written approval by the Fort Bend County Public Transportation Director or their designee properly defining and limiting any such change. Contractor shall be liable for all costs resulting from and/or for satisfactorily correcting any specification change not properly ordered by written modification to the Contract and signed by the County.

Within 14 calendar days after Contractor's receipt of the written change order request for modification of the Contract, Contractor shall submit to County a detailed price schedule proposal for the work to be performed. This proposal shall be accepted or modified by negotiation between Contractor and the County. At the time both parties shall execute a detailed Contract modification in writing. Disagreements that cannot be resolved within negotiations shall be resolved in accordance with the contract disputes clause.

It is distinctly understood and agreed that no claim for payment for work done or materials furnished by the Contractor outside of these parameters shall be paid by County. Any such services or materials furnished by Contractor without such written order shall be at the risk, cost and expense of the Contractor, and no claim for compensation for any such services or materials shall be made.

All such changes, which are mutually agreed upon by and between all parties, shall be incorporated in written amendments to the Contract. All such amendments shall state any increase or decrease in the amount of the compensation due to County for the change in the scope.

25.32. Force Majeure

Contractor agrees that neither the County nor Contractor shall be liable or responsible to the other party, nor be deemed to have defaulted under or breached this Agreement, for any failure or delay in fulfilling or performing any term of this Agreement when and to the extent such failure or delay is caused by or results from acts beyond the impacted party's ("Impacted Party") control, including, but not limited to, the following force majeure events ("Force Majeure Events"): (a) acts of God; (b) a natural disaster (fires, explosions, earthquakes, hurricane, flooding, storms, explosions, infestations), epidemic, or pandemic; (c) war, invasion, hostilities (whether war is declared or not), terrorist threats or acts, riot or other civil unrest; (d) government order or law; (e) actions, embargoes or blockades in effect on or after the date of this Agreement; (f) action by

any governmental authority; (g) national or regional emergency; (h) strikes, labor stoppages or slowdowns or other industrial disturbances; and (i) shortage of adequate power or transportation facilities. The Impacted Party shall give notice in writing within three (3) business days of the Force Majeure Event to the other party disclosing the estimated length of the delay and the cause of the delay. The Impacted Party shall use diligent efforts to end the failure or delay and ensure the effects of such Force Majeure Event are minimized. The Impacted Party shall resume the performance of its obligations as soon as reasonably practicable after the removal of the cause. In the event that the Impacted Party's failure or delay remains uncured for a period of ten (10) days following Notice given by it, the other party may thereafter terminate this Agreement upon notice.

25.32.1 Acceptance of late deliveries will not be deemed a waiver of County's right to hold Contractor liable for any resulting loss or damage, nor will it act as a modification of Contractor's obligation to make future deliveries in accordance with the delivery dates set forth in Attachment A.

25.32.2 If, at any time, Contractor believes it may be unable to comply with the delivery dates set forth in Attachment A, then Contractor must immediately notify County in writing of the probable length of any anticipated delay and the reasons for it. Contractor will continue to notify County of any material change in the situation. In the event of such notification or of an actual failure by Contractor to comply with the delivery dates, County may utilize all remedies available at law.

25.33. Federal Tax Liability

Contractor and any subcontractors certifies that they do not have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and was not convicted of the felony criminal violation under any Federal law within the preceding 24 months.

25.34. Domestic Preferences for Procurements.

As appropriate and to the extent consistent with law, Contractor and any subcontractor shall to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products procured with federal funds. For purposes of this clause, (1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States. (2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

Section 26. Conflict

If there is a conflict between this Agreement and any attached item, the provisions of this Agreement shall prevail.

Section 27. Captions

The section captions used in this Agreement are for convenience of reference only and do not affect the interpretation or construction of this Agreement.

Section 28. Certain State Law Requirements for Contracts.

For purposes of Section 2252.152, 2271.002, and 2274.002, Texas Government Code, as amended, Contractor hereby verifies that Contractor and any parent company, wholly owned subsidiary, majority-owned subsidiary, and affiliate:

28.1 Unless affirmatively declared by the United States government to be excluded from its federal sanctions regime relating to Sudan or Iran or any federal sanctions regime relating to a foreign terrorist organization, is not identified on a list prepared and maintained by the Texas Comptroller of Public Accounts under Section 806.051, 807.051, or 2252.153 of the Texas Government Code.

28.2 If employing ten (10) or more full-time employees and this Agreement has a value of $100,000.00 or more, Contractor does not boycott Israel and is authorized to agree in such contracts not to boycott Israel during the term of such contracts. "Boycott Israel" has the meaning provided in section 808.001 of the Texas Government Code.

28.3 If employing ten (10) or more full-time employees and this Agreement has a value of $100,000.00 or more, Contractor does not boycott energy companies and is authorized to agree in such contracts not to boycott energy companies during the term of such contracts. "Boycott energy company" has the meaning provided in section 809.001 of the Texas Government Code.

28.4 If employing ten (10) or more full-time employees and this Agreement has a value of $100,000.00 or more, Contractor does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and is authorized to agree in such contracts not to discriminate against a firearm entity or firearm trade association during the term of such contracts. "Discriminate against a firearm entity or firearm trade association" has the meaning provided in section 2274.001(3) of the Texas Government Code. "Firearm entity" and "firearm trade association" have the meanings provided in section 2274.001(6) and (7) of the Texas Government Code.

Section 29. Human Trafficking

BY ACCEPTANCE OF CONTRACT, CONTRACTOR ACKNOWLEDGES THAT FORT BEND COUNTY IS OPPOSED TO HUMAN TRAFFICKING AND THAT NO COUNTY FUNDS WILL BE USED IN SUPPORT OF SERVICES OR ACTIVITIES THAT VIOLATE HUMAN TRAFFICKING LAWS.

Section 30. Entire Agreement

This executed instrument is understood and intended to be the final expression of the parties' agreement and is a complete and exclusive statement of the terms and conditions with respect thereto, superseding all prior agreements or representations, oral or written, and all other communication between the parties relating to the subject matter of this agreement. Any oral representations or modifications concerning this instrument shall be of no force or effect excepting a subsequent modification in writing signed by all the parties hereto.

IN WITNESS WHEREOF, the parties hereto have signed or have caused their respective names to be signed to multiple counterparts.

FORT BEND COUNTY

KP George, County Judge

Date

CREATIVE BUS SALES, INC.

Nick Corley
Authorized Agent- Signature

Nick Corley
Authorized Agent- Printed Name

Transit Bid Manager
Title

10/18/2022
Date

ATTEST:

Laura Richard, County Clerk

REVIEWED by:

Perri L. D'Armond
Fort Bend County Public Transportation Director

AUDITOR'S CERTIFICATE

I hereby certify that funds are available in the amount of **$_____** to accomplish and pay the obligation of Fort Bend County under this contract.

_____
Robert E. Sturdivant, County Auditor

ATTACHMENT A

SCOPE OF WORK

CONTRACTOR'S RESPONSE TO THE RFP
and
Exhibits I, II, III

Fort Bend County – Travis Annex
Attn: Purchasing Department
301 Jackson, Suite 201
Richmond, Texas, 77469

Sealed Proposal

Request for Proposal – Number 22-034

Purchase of Transit Vehicles for
Fort Bend County Public Transportation

Bid Opening: March 15, 2022 at 2:00pm (CST)

Proposal By
Creative Bus Sales

4955 West Northgate Drive
Irving, Texas, 75062
Office: 463-333-8909

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

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Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

Executive Summary

Bid Review Committee,

Thank you and Fort Bend County Public Transportation for the opportunity to submit a response to RFP Number 22-034, Purchase of Transit Vehicles for Fort Bend County Public Transportation.

Our understanding of the scope of work pertaining to this Request for Proposal is to provide Fort Bend County proposals for the manufacture and delivery of products in accordance with the terms and conditions set forth in this solicitation, meeting all specifications and FMVSS laws.

CBS's proposal may include manufacturer's brochures, standard warranty information, and additional technical information within our bid submittal. Information shown on these documents indicates our manufacturer's standard equipment or specifications and does not necessarily reflect the exact equipment to be utilized or included with Exhibits I, II, and III. Our vehicles are built to meet all bid specifications and amendments, unless otherwise noted in our exceptions list entitled Exceptions, Section 5x.

The resulting contract will be for the following vehicles with related necessary components, and selected options:

One bus (each) – Exhibit 1 – Medium Duty Cutaway, 40 passenger, 2 wheelchairs
One bus (each) – Exhibit 2 – Medium Duty Cutaway, 32 passenger, 2 wheelchairs
One van (each) – Exhibit 3 – Full Size ADA Van, 12 passenger, 2 wheelchairs

The information contained in our proposal contains our qualifications to perform the required work, detailed specifications, warranties, and required options. Our dedicated staff below will manage the build and delivery process:

Jeff Johnson, Regional Transit Sales. Direct 512-202-2920. Email: jjohnson@creativebussales.com
Ryan Frost, General Manager South Region. Direct 817-915-6722. Email ryanf@creativebussales.com
Nick Corley, Sales Operations Manager. Direct 678-428-3356. Email ncorley@creativebussales.com
Jason Spore, Bid Analyst. Direct 425-293-9495. Email: Jason.spore@creativebussales.com

Included are all the documentation and general forms required. If you need more information or clarification, please give us a call at 800.326.2877 with any inquiries. We look forward to working with Fort Bend County Transportation.

Sincerely,

Nick Corley | Sales Operations Manager
Creative Bus Sales, Inc.
800-326-2877
ncorley@creativebussales.com

Creative Bus Sales

Scope of Work

Bid Review Committee,

It is our understanding that **Fort Bend County** is looking to enter into a **five (5) year** vehicle contract to procure multiple size and type vehicles. The contract may be awarded to **one (1) or more vendors** at the discretion of Fort Bend. Fort Bend's contract will be to provide new, current production model transit vans and buses that meet ADA (Americans with Disabilities Act) requirements and are broken out into the following categories:

1. Medium Duty Cutaway Buses
    a. Type 11
    b. 40 passenger
    c. Quantity of 1-70
2. Medium Duty Cutaway Buses
    a. Type 11
    b. 32 passenger
    c. Quantity of 1-10
3. Full Size ADA Vans
    a. Type 1
    b. 12 passenger
    c. Quantity of 1-50

The contract will be awarded to the highest evaluated firm meeting specifications, per size vehicle, and the contract term of five (5) years will begin on the date the agreement is fully executed. Further technical and descriptive material is included in the Company's complete proposal.

Creative Bus Sales is very well equipped to handle the needs of Fort Bend County today and over the next five years. As the largest bus dealership in the United States, Creative has decades of nationwide sales experience, satisfied transit agencies throughout the State of Texas and the country, and unparalleled service and support. The Company strives to keep the transit industry moving in America by representing reputable products that meet the end users' needs. Information included in the proporsal provides a detailed background on the Company and the key personnel that are responsible to service the **Fort Bend County** contract.

Creative Bus Sales delivers in excess of 5,000 units annually and holds various transit contracts throughout the country. The Company staff prides themselves on maintaining and renewing contracts with agencies year after year. The Company currently holds contracts with: CalACT, Washington DOT, Arizona DOT, New Mexico DOT, Dallas DART, Florida FDOT, HGAC, North Carolina DOT, Penn DOT and GSA. All of these are major multi-vehicle statewide contracts that the Company has had successfully fulfilled for an extended period. The Company's ability to provide a seamless transaction with unparalleled support keeps customers coming back year after year.

Creative Bus Sales provides new vehicles faster from the time of order than any other dealer with the guarantee that your delivery comes as ordered. The Company operates 23 full-service locations with 300+ service bays to ensure efficient servicing and to maximize vehicle uptime. Each vehicle ordered goes through a rigorous Pre-Delivery Inspection process that involves multiple inspections and reviews. The Company's ASE Certified technicians verify that the manufacturer built the vehicle according to specifications/FMVSS and that vehicles arrive issue-free.

Creative Bus Sales

To support Fort Bend post-delivery, Creative Bus Sales employs a nationwide dedicated Creative Care team in addition to our network of qualified service technicians and local support. The Creative Care team is focused solely on resolving issues and reducing vehicle downtime. The Creative Care team is not tasked with warranty paperwork or manufacturer approvals. Additionally, the Company employs experienced warranty and service administrators at all locations that oversee onsite and third-party vehicle repairs and ensure timely completion of repair work. The enclosed documents provide a more detailed explanation of the Company's capabilities and processes.

For operators that wish to perform their own warranty work, Creative Bus Sales' staff works with the end user to process warranty claims and solidify reimbursement for their costs. For locations that are not capable of performing their own warranty or service work, the Company can coordinate all warranty or service work needed with local repair shops and OEM manufacturers. To the extent possible, Creative Bus Sales strives to provide local service, making it easier for Fort Bend to get their vehicles repaired and back into ervice.

Along with Creative Bus Sales' extensive service and warranty team, the Company employs a team of 25+ parts support personnel to fulfill all parts needs. At any given time, the Company has $10 million in parts inventory located at one of our six nationwide warehouses. This ensures fast, easy delivery to our customers with many parts arriving next day, most in as little as 2 – 3 days from time of order.

For vehicle ordering, we have a proven order-to-delivery process that works for even the most demanding agencies. Creative Bus Sales will integrate our process and the requirements to Fort Bend's needs to create a seamless transaction. The Company contract administrator will work hand in hand with Fort Bend and the factories to ensure all specifications are met or exceeded through the order process and end user delivery. The use of this system has helped manage major contracts making sure all parties receive what was ordered. The Company staff manages tabulation spreadsheets with various State Departments to track vehicle orders from the start of the process, to the close of an invoice, through receipt of payment. This ensures that no vehicle orders are lost and unaccounted for and allows for detailed tracking of orders.

Creative Bus Sales hopes to continue to be able to bring these few qualities **to Fort Bend County** and many more qualities that we have to offer. We look forward to the opportunity to work together on the project.

Nick Corley is authorized to sign all documents pertaining to this bid on behalf of Creative Bus Sales. Please feel free to contact us if more information is needed to substantiate our proposal.

Thank You,

Tony Matijevich | President
Creative Bus Sales, Inc.
909.465.5528
TonyM@CreativeBusSales.com

T.J. Matijevich | Vice President
Creative Bus Sales, Inc.
909.465.5528
TJ@CreativeBusSales.com

Creative Bus Sales

CBS Work Plan

To ensure open communication, accuracy of order(s) and best possible contract deliverables, Creative Bus Sales has outlined the following Work Plan for use with Fort Bend County.

Once Awarded:

1. Receive purchase order and set date for pre-build conference (to occur 30 days from receipt of PO).
2. Exchange notes from any previous deliveries for review prior to pre-build conference. Review notes from previous builds associated with this bid.
3. Set agenda for pre-build conference.

Pre-Build Conference:

4. Confirm accuracy of order.
5. Review customer/manufacturer questions.
6. Review documentation requirements.
7. Review inspection, delivery, and acceptance criteria.

Place order with factory:

8. Disperse notes from pre-build conference to all attendees and vehicle manufacturer with a request to check for accuracy and confirm within seven (7) days of the conclusion of the pre-build conference.
9. Review response to meeting notes and disperse replies to all involved parties.
10. Receive initial build schedule from Manufacturer.
11. Receive revised/confirmed build schedule from manufacturer with chassis id numbers.
12. Set dates for on-site inspections with purchaser and manufacturer.
13. Set date for pre-inspection meeting.

Pre-inspection meeting:

14. Review inspecting criteria and procedure with customer.
15. Set goals and agenda for on-site inspection.
16. Forward meeting notes to the manufacturer to insure required preparations are made.

On-site inspection at manufacturer's facility:

17. Review of required documentation.

18. Physical review of assembly stations for "Buy America" compliance. (FTA).

19. Physical inspection of first production unit for compliance to specifications and quality of the assembly process.

20. Review of the inspection notes with the manufacturer.

21. Physical inspection of incomplete units on line.

22. Re-inspection of first production unit to insure that any defects have been corrected and that the vehicle is acceptable in its current form.

23. Re-inspection of incomplete units on line to insure that required corrections are being carried through to production vehicles.

24. Establish schedule for shipping of completed units with vehicle manufacturer.

25. Prepare Request for Work to shop.

Inspection and Delivery to Creative Bus Sales:

26. Upon arrival at Creative Bus Sales each vehicle is prepared for delivery, fueled and cleaned as stated in the contract or sales agreement.

27. Creative Bus Sales notifies the purchaser of vehicles prepared for delivery and ready for acceptance inspection.

28. On multiple unit orders, Creative Bus Sales will provide a spreadsheet matrix to assist in tracking the inspection and acceptance process.

29. Acceptance inspections shall commence within a reasonable and mutually agreed period of time.

30. Creative Bus Sales is to render whatever assistance, tools and / or equipment are necessary to perform the required acceptance inspection.

31. Upon inspection by agents of the purchaser, the vehicle is deemed:

    a. No defects – accepted for delivery.

    b. Conditionally accepted with the understanding that the noted defect(s) are to be corrected within a reasonable and mutually agreed upon period of time.

    c. Not accepted – to be re-inspected upon correction of defect(s).

32. Vehicles not accepted shall have payment withheld until the defects have been corrected and the vehicle has successfully passed re-inspection of the defective item.

33. Vehicles that are accepted are to be delivered to the purchaser's property/facility within one (1)

business day of the completion of the acceptance inspection.

34. The purchaser will supply Creative Bus Sales with a list of persons authorized to sign for receipt of delivered vehicles and documentation.

35. Upon delivery, payment is to be processed as indicated in the bid contract or sales agreement.

Quality Assurance & Inspection

As buses are released from the Original Equipment body manufacturer, Creative Bus Sales has each unit shipped to our local location. When the bus arrives in our shop facility the VIN, and Unit Number are shared with our corporate DMV department in order to begin processing end user information for MSO re-assignments and registration. The bus is then scheduled for Creative's Offline production where the bus goes through a Quality, Safety, and Customer specific inspection per the customer approved build/order data.

Should there be build spec, or safety concerns which warrant the unit returning to the OEM Body Manufacturer, issues are then shared with the OEM by Creative's Quality Assurance team for immediate decisions as to the corrective action. Should the bus require return to the OEM, it is usually within the same day of the QAI (Quality Assurance Inspection), due to the bus OEM builder being domiciled only twenty (20) miles away from Creative's Elkhart facility. Should the van need to return to the OEM builder, it is usually within the same week of the QAI pending driving availability.

Should the bus meet the QAI expectation, the van or bus moves onto the offline production floor where a CBS specific PDI is performed. Creative uses an industry standard PDI form marked with additional inspection line items per industry standards. This is a Pass/Fail/QC form initialed, dated, and stored by Creative technicians for greater quality control and history.

As part of continuous improvement, Creative creates a new line item inspection on the PDI form as we acquire new failed data history, specific customer expectation, and or customer preference. This allows Creative to customize the experience by individual customer/agency.

Once the bus has passed the PDI, the bus is detailed, interior, and exterior, and is then slated for delivery to the end user by our VMO (vehicle management officer).

Once in the State the bus has a state inspection performed. Our CBS Quality Assurance Team then contacts the Creative Bus Sales DMV department for final vehicle registration to the end user. Creative's VMO then schedules with the destination (end user) the final delivery of the bus. The bus has a final DOT driver walk around inspection performed, wash, and fueled prior to moving to the new owner.

See attached sample contract PDI form as well as Fort Bend delivery and acceptance documents.

Contract Status Report and Update Meetings

Communication, transparency, and teamwork are key components to a successful vendor-customer relationship. If awarded, Creative Bus Sales would like to implement a best practice.

Every two weeks at the beginning of the contract and monthly after Creative will report on the following items:

- Report of deliveries occurring since the last report, and if there were any open issues reported at delivery
- Delivery issue status report outlining any open issues identified at delivery and outstanding warranty claims. Warranty claims will continue to be tracked, and are assigned an Issue Start Date, Repair Status, and an ETA Closed Date
- Delivery Schedule showing projected delivery dates for all open orders
- DMV status report shows the customer status of submitting needed documents to title the vehicles
- History of all vehicles shipped on the contract with shipment date
- Critical issues report outlining items that affect multiple orders. Example would include chassis delays due to Ford supply chain issues

Following the issuance of the report, Creative Bus Sales would meet via conference call with contract managers to discuss open items, questions about findings in the report, review company and contract updates, and have an open line of communication.

This process of meeting for 15-30 minutes every two weeks to monthly will result in vendor and contract management being on the same page and developing ideas to increase efficiencies.

Creative very much considers this a five+ year partnership with Fort Bend County and is open to any and all suggestions and improvements to enhance contract deliverables and assist in Fort Bend's operations.

Creative Bus Sales, Inc.

Date: / /	CUSTOMER:	BODY #: MILES:
	MAKE: MODEL:	VIN #:

PRE-DELIVERY INSPECTION

PASS	FAIL	QC	INSPECTION AREA	DESCRIPTION OF REPAIRS MADE
			DRIVERS AREA	
			Horn operation	
			Lights: drive, marker, tail, stop, backup	
			LED Swivel Dome Light in drivers area, OEM Chassis Light Switch	
			Turn Signals	
			Panel Lamps - interior lights	
			Gauges/indicators - fuel gauge, speedometer, temperature indicator, oil pressure indicator and amperage indicator all present	
			Wiper blades - operation	
			Windshield washer - operation	
			Shift Linkage, Indicator	
			Windshield/Glass/Mirrors	
			Parking Brake	
			Inspect shift cable for potential wear (Braun Builds)	
			Seat Fabric matches order sheet, High Back Captains Seat reclines, 6-way pedestal or Adnick powered pedestal with shroud	
			Tilt Steering Wheel	
			Running Board - drivers side	
			Sequence List: place gear selector in park or neutral, depress brake and check engine for: ignition key lock and operation, starter, acceleration pedal, engine operation and idle.	
			Brake Operation: 1) Parking Brake - Check operation of parking brake release 2) Foot Brake Pedal Travel - Free pedal travel should not exceed halfway point	
			Power Steering: swing wheel lock to lock, check for full movement of wheels, belt slip, leaks	
			Check operation of heater	
PASS	**FAIL**	**QC**	**UNDER HOOD INSPECTION**	
			Cooling System	
			Drive Belts	
			Inspect Belts & Tensioners for proper bracketry	
			Radiator Hoses	
			Heater Hoses	
			Coolant Level	
			Radiator Cap	
			LED under hood Light (Minimum 50 lumens)	
			Engine Inspection at Idle: 1) Exhaust - listen for escaping exhaust gasses 2) Air Conditioning - examine belt tensions, check for leaks, verify that mountings are secure 3) Electrical System/Alternator/Regulator - Verify mountings are secure, check for bearing and belt squeaks, vibrations	
PASS	**FAIL**	**QC**	**ELECTRICAL & CHARGING SYSTEM**	
			Battery	
			Battery Cables	
			Alternator/Regulator	
			Mounted securely w/proper bushings & spacers	
			Proper Alignment	
			Wire Properly (13.5 volts under load)	
			Positive cable protected with loom	
			Inspect PCM wiring harness for wear/rubbing	
			12 V maint. Free battery, 1,200 CCA @ 0 degrees, one battery mounted in engine compartment if available from OEM	
			Minimum 200 amp Alternator	
			Stain.Steel Rollout Battery Tray/Battery Box	

PASS	FAIL	QC	ENGINE	
			Oil	
			Breather	
			Air Cleaner/Filter	
			Turbocharger clamps and hoses	
			Fuel Filter for leaks	
			PCV Valve, Filters	
			Charcoal Canister	
PASS	FAIL	QC	AIR CONDITIONER	
			Leak Test all fittings	
			Leak, compressor seal	
			OEM A/C Pressure: Low Side:_____High Side:_____	
			Add on A/C Pressure: Low Side:_____High Side:_____	
PASS	FAIL	QC	CONDENSORS	
			Secured to undercarriage (bolted through floor to floor rails)	
			Opening in skirt to receive maximum air flow	
			All fans blowing air in proper direction	
			Aire connections tight and protected from water, salt, etc.	
			Oil wiped off fittings	
			Sigh Glass Clear & Dry	
			Evaporators fans	
			Mounted to roof with proper/sufficient hardware	
			Roof Rails caulked on roof of bus	
			Air inlets/outlets unrestricted	
			Suction hose covered with insulation (Armaflex)	
			Drain lines to both sides of bus & running down hill	
			Oil wiped off fittings	
			Inspect A/C hoses along fire wall for rubbing	
			Passenger area condenser (separate from radiator) is skirt mounted with minimum of 3 fans and 3 motors	
PASS	FAIL	QC	EVAPORATOR	
			Mounting brackets riveted to ROOF BOWS ONLY	
			Both Drain lines used & RUNNING DOWN HILL	
			Electric: (Controls, relays, wiring etc.)	
			Thermostat cycles compressor	
			Driver controls located conveniently	
			Circuit breakers located within 24" of power source	
			Relays mounted in enclosed area (battery box engine compartment)	
			Wiring Harnesses routed properly/securely	
			Wired according to diagram	
			Wired protected from heat sources, sharp edges, environment	
			Belt Alignment	
			Guard/shields if equipped	
			"STOP" Warranty sticker (s) affixed to compressor (s)	
			Hoses are tied away from moving parts	
			Hoses protected from heat sources (such as exhaust system)	
			Hoses protected from sharp edges (passing through floor and walls)	
PASS	FAIL	QC	FLUIDS	
			Master Cylinder	
			Power Steering	
			Cooling System	
			Auto Transmission	

PASS	FAIL	QC	UNDER VEHICLE Inspection - BUS HOISTED FOR INSPECTION	
			Water Pump/Freeze plugs	
			Timing cover gasket, seal	
			Oil pan gasket, rear seal	
			Oil sending unit	
			Fuel Pump	
			Transmission	
			Seal leaks	
			Axles, boots	
			Brakes	
			Front Rotors & Drums	
			Front Break Linings	
			Wheel Bearings	
			Brake Hoses	
			Calipers or Wheel Cylinders	
			Wire ties and P Clamps	
			Differential	
			Bearing	
			Seals	
			U-Joints or CV-Joints	
			Driveshaft, Drive Axles	
			Suspension & Steering	
			Ball Joints/Linkages	
			Shock Absorbers	
			Steering Gear	
			Power Steering Hoses	
			Exhaust System	
			Fuel Tank/Lines	
			Tire Pressure	
PASS	FAIL	QC	UNDER VEHICLE Inspection - BUS HOISTED FOR INSPECTION	
			Steering Linkage: Check for loose parts, excessive play	
			Lube Fittings: Inspect steering linkage, control arms and universals, check lube level (rear end)	
			Leaks: Inspect break lines, transmission seals and cooling lines, oil sump and valve covers, radiator pump and heater, shocks and air conditioner seals and lines	
			Check for abrasions and damage on brake lines and cables, fuel lines, transmission, cooling and refrigerant lines, wires and hoses	
			Suspension: Inspect springs for breakage and distortion, spring hangers for distortion, breakage and loose anchors, ensure U-bolts and nuts are not loose or missing, inspect axle housing and backing plate for distortion, breakage and leaks.	
			Exhaust: Visually check for holes/excessive bends in piping and muffler, loose clamps, hangers and flanges, general damage	
			Undercoating: Inspect for completeness	
PASS	FAIL	QC	INTERIOR EQUIPMENT	
			Fast Idle	
			Door Adjust Controls	
			Radio/Speakers	
			AM/FM/CD with digital clock, Front Driver Speaker and Dual Four Rear compartment speakers	
			Fuel Gauge	
			Speedometer	
			Odometer	
			Window Latches and Slides	
			T-Slider sash window for ventilation	
			Video System	
			Spare Wheel/Tire UNMOUNTED INSIDE vehicle	
			Lift and Emergency Doors have passive Hold Open Device	
			Lights: Stepwell, Curb and Dome Lights activate when Front Passenger door is open, while engine running	
			All interior lights (6 rear) are LED with switch on dash and door operated switches on all doors	
			Passenger rear view mirror, minimum 4" x 16"	
			Handrails on both sides of steps at entry door	
			Wall mounted first aid kit, hard shell (Johnson & Johnson #8172 or approved equal)	
			Mounted, 5 pound dry chemical type A-B-C fire extinguisher	
			Emergency warning triangle, and flare kit	
			OSHA approved body fluids clean up kit, in hard Plastic case	
			Two belt cutters, shipped loose with self-adhesive Velcro tape	

PASS	FAIL	QC	EXTERIOR	
			Rear center stop light	
			Exhaust exits on drivers side, BEHIND rear wheels, within 6" of bumper	
			Metal roof gutters, over ALL windows and doors (including driver door)	
			Rear windows on each side of rear door	
			Check windows/ Roof hatch for water leaks	
PASS	FAIL	QC	VEHICLE ENTRY	
			Front entrance door, unobstructed, clear entry. Opening at least 29" wide, and full height of at least 72"	
			Stepwell treads at least 8.5 " deep	
			Distance from ground to first step - 11" +/- 1"	
			Individual step risers no more than 9" high	
			Step width minimum 29"	
			Step nose is yellow in color	
			Rear Emergency Door has upper/lower window	
			First step is electrically heated	
			Unladen clearance height PLUS 2" marked on decal/sign and is clearly visible to driver. Lettering is 1 -1/2" high	
			Escape roof hatch, alarm audible when opened, opens from inside or outside	
PASS	FAIL	QC	ADDITIONAL OPTIONAL EQUIPMENT	
			Wheelchair Restraints & Track	
			Wheelchair lift	
			Seat Latching Mechanisms	
			Safety Equipment	
			Stanchions & Grab Rails	
			Flooring	
			Backup Camera	
			Backup alarm system, alarm upon backup	
			Mud flaps on all wheels	
PASS	FAIL	QC	VEHICLE DOCUMENTATION	
			Operators manual in vehicle (Ford OEM)	
			Electrical Manual in vehicle, manuals for add on equipment (USB)	
			Front End Alignment documentation in vehicle	
			Wiring Schematic drawings in vehicle (USB)	
			*** Ensure Build sheet options match actual vehicle build!! ***	
PASS	FAIL	QC	VEHICLE APPEARANCE	
			Exterior Wash/Dry	
			Interior Clean Complete	
			Windows	
PASS	FAIL	QC	BODY STRUCTURE	
			Body Structure Damage	
			Windows	
			Seats	
PASS	FAIL	QC	ROAD TEST	
			Exterior Noises	
			Interior Noises	
			Vibrations	
PASS	FAIL	QC	BRAKE PADS	
PASS	FAIL		LF_____RF_____	
PASS	FAIL		OUTER LR_____INNER LR_____OUTER RR_____INNER RR_____	

SIGNATURE OF INSPECTOR: **DATE:**

EXHIBIT V
DELIVERY AND ACCEPTANCE INSPECTION CHECKLIST

Medium Duty Cutaway Bus, Type II - Champion Defender

VIN# _____ Make _____ Model _____
Manufacturer _____ Year _____
Date _____ Signature _____

Item	No.	Instruction	Check	Comments/Remarks
WALK AROUND				
General	1	(4) sets of keys and locks for all doors		
	2	All vehicles ordered on the same purchase order should be keyed alike. Exception may be made if ignition keys contain an electronic chip.		
	3	Interior and exterior cleaned and washed		
	4	Visually check for en-route damage such as cracks and dents.		
	5	All lubricant levels checked		
	6	Electrical system inspected		
	7	Braking system inspected		
	8	Suspension system inspected		
Interior Panel Fastening	9	Visually inspect all interior panels and moldings for fit.		
Windshield Wipers	10	Verify windshield wipers and washer are operational. Observe position of parked windshield wiper arms and blades.		
Fuel Group	11	Verify fuel tank is at least 1/4 full.		
	12	Diesel Exhaust Fluid (DEF) tank OEM style, separate or within diesel fuel fill door		
	13	Ultra-low sulfur diesel on driver's side near rear duals		
	14	DEF: locked door with key		
	15	Fuel box key		
Radio	16	Verify both AM and FM are operational.		
Exterior Mirrors	17	Verify mirror head is not less than 6" x 9".		
	18	Verify there are no cracks.		
Lockout System	19	Verify vehicle cannot drive with the wheelchair lift door ajar and the lift deployed.		
Back Up Warning System	20	Verify system is functional (by putting the vehicle in reverse and listening for the buzzer).		
	21	REI Back-up camera working; LED start button		
Driver Controls	22	Ignition & Driver's Door keys		
	23	Place the key in the off position. Verify: all circuits are off, excluding interior lights, stop lights and horn.		
	24	Turn the key on. Verify: all systems are on or may be switched on by the driver.		

Item	No.	Instruction	Check	Comments/Remarks
Exterior Lighting	25	Switch on. Verify: all lamps illuminated according to indications on the switch.		
	26	Verify: When the door is open, lights should illuminate the street surface for a distance of 3' perpendicular to all points on the bottom step tread outer edge. Lights are located below the window level and shielded to protect the eyes of entering and exiting passengers.		
Interior Lighting	27	Switch on all interior lights. Verify: all bulbs are illuminated by appropriate switches.		
	28	Verify lights illuminate.		
	29	Immediately adjacent to driver--Open door shall have 2 foot candles of illumination.		
Exterior Passenger Door	30	Key for exterior passenger door		
	31	Verify electric door opens.		
	32	Operating controls should be located within easy reach of the driver.		
	33	Door Opening: Minimum height 80" from top of first step to entrance header; minimum width 30" clear opening.		
	34	Verify door locks from the outside and/or inside.		
Emergency Exit	35	Verify door opens from either inside or outside.		
	36	Verify warning buzzer is operational when the ignition is on and door is locked.		
	37	The inside operation handle is marked to indicate its location and operation.		
	38	Door opening at a minimum of 4'7" from the top of the floor.		
	39	Door is labeled "EMERGENCY DOOR" with 2" high upper case letters.		
Seat Belts	40	Verify each seat has a lap belt.		
Seating	41	Passenger seating is the same color and material as the driver seat.		
	42	All seats face forward.		
	43	An arm rest is on the aisle end of each passenger seat.		
	44	Track seating (only applicable to some models)		
	45	Passenger seats are removable, or jump seat folds up for wheelchair access		
	46	A handrail is provided along the top of all passenger seats		
Tires/Wheels	47	(7) All-weather radial tires (6 + 1 spare) -- largest available/minimum 19.5"; wheels and lug nut indicators (if available) for all wheels; front and rear mud flaps		
	48	Tires are electronically spin-balanced to minimum 65 mph.		
	49	Vehicle must be aligned upon delivery. (Contractor must review the alignment form upon completion of the alignment.)		
	50	Spare tire with appropriate jack (will be loose inside the vehicle and spare tire is identical to tires on the vehicle)		
Steering	51	Tilt		
Steering	52	Power		

Item	No.	Instruction	Check	Comments/Remarks
HVAC	53	Inside air system shall filter air at a rate of 15 CFM and equiped with a HEPA-14 filtration system with a MERV of 16 or better.		
Air Conditioning	54	Integral front A/C rated at 15,000 BTU		
	55	Auxiliary rear A/C; minimum 74,000 BTU w/665 CFM diffused airflow		
	56	Fast idle switch: mounted out of the way so driver does not hit the switch when entering or leaving the vehicle		
	57	Run A/C at low and high speeds for 5 minutes to ensure that the blower is operational.		
Heater	58	Dash unit standard factory		
	59	Auxiliary: minimum 65,000 BTU located in rear half of passenger area		
	60	Run heater at low and high speeds for 5 minutes to ensure that the blower is operational.		
Roof Ventilator	61	Check to see if adjustable for fresh air ventilation in all directions.		
	62	Release handle permitting emergency exit. Safety vent opens from inside/outside the vehicle		
	63	Verify HEPA Filtration system is functional		
Horn	64	Verify horn functions.		
Emergency Equipment	65	Verify Fire extinguisher is stored on mounting bracket.		
	66	First aid kit		
	67	Body fluid cleanup kit		
	68	Seat belt cutter with velcro securement		
	69	(3) reflective triangle kits		
	70	Working flashlight		
	71	Reflective vest		
	72	(2) Chock blocks		
Handrails	73	All shall be 1-1/4" (minimum) diameter metal tubing and covered with impact absorbing material at least 3/8" thick.		
	74	Entrance handrails are not padded.		
	75	All shall permit sufficient turning and maneuvering space for wheel chairs/mobility aids.		
	76	Check to see that handrails have a minimum of 1-1/2" knuckle clearance from nearest adjacent surface.		
	77	Located along the top of all passenger seats (minimum aisle seats)		
Stanchions	78	Located on interior left side of the front passenger door approximately 14" inside the vehicle. Hand rail between stanchion and right wall approximately 30" above the floor. Modesty panel installed below horizontal handrail.		
	79	Located in the rear of the driver's seat at the edge of the aisle from a handrail and extend from the stanchion to the sidewall of vehicle behind the driver's seat.		

Item	No.	Instruction	Check	Comments/Remarks
Exterior Labeling	80	Handicap sticker: standard ADA compliant, white on blue, 7" square wheelchair symbol, (3)--left side, right side and rear		
	81	Warning sign: "CAUTION, CHILDREN MAY BE EXITING" -- (1) on rear; black letters on yellow background, 14" x 5"		
	82	Warning sign: "NOTICE THIS VEHICLE STOPS AT ALL RAILROAD CROSSINGS" -- (1) on rear; "NOTICE" white letters on blue background, other letters black on white, 10" x 7"		
	83	Letter coloring should contrast with color of the vehicle.		
	84	Check spelling.		
	85	International Disabled Vinyl Decal: 6" x 6" outside bottom of wheelchair lift		
	86	International Disabled Vinyl Decal: 4" x 4" on interior windows designate each wheelchair securement location		
	87	One set of seats is designated as priority seating for disabled.		
	88	Labeling shall be consistent with the background: light-on-dark or dark-on-light		
Wheelchair Lift (Must meet ADA Requirements)	89	Platform size: 32" x 48" (minimum)		
	90	Power unit: 12volt electric-hydraulic operated		
	91	Hand pump for power failure		
	92	Platform: Band of colors running the full width of the edge with contrasts from the lift surface		
	93	1,000 lb. capacity, Ricon Titanium S Series (or approved equal)		
Wheelchair Lift Door	94	Wheelchair lift door keys		
	95	Door locks from outside.		
	96	Each door has a window.		
	97	Top Mounted Gas Shock (no sliding door)		
	98	Lift should be located right curbside with minimum 36" clearance.		
Wheelchair Location	99	Check to see if number of locations match the purchase order.		
	100	Wheelchair location must be forward facing.		
Wheelchair Restraint System	101	4-Point Belt Tie-Down/Track System		
	102	Sure-Lok or Q-Straint (or approved equal)		
	103	Tract sections recessed below floor surface, wall mount for shoulder harness		
	104	Safety Belts: Each wheelchair location is equipped with the pelvic-high lap belt and shoulder harness.		
Engine Heater	105	Location shall be in a manner that the wiring will not contact hot engine parts.		
	106	Verify that the plug-in is located on the outside of the front grill.		
Additional On-Board Equipment	107	(2) Fare box with vault Fare Keys		
	108	Luminator compartment key		
	109	Bike Racks Sportworks DL2: easily removed for towing		
	110	Passenger Stop Request: Mounted no higher than 48" or no lower than 15" from the floor		
	111	Public Address System: 4 interior and 1 exterior weather-proof speakers		

Item	No.	Instruction	Check	Comments/Remarks
Additional On-Board Equipment	112	Luminator Horizon SMT auto-electronic destination signs: front, right and interior; ADA compliant with ODKR controller		
	113	Automatic Voice Annunciation System: ADA compliant		
Battery/Tray	114	Battery box keys		
	115	Secured and polarized wiring		
	116	Access for jump start		
	117	(2) Heavy duty 12volt batteries		
	118	Lockable box on curbside		
	119	Slide out stainless steel tray that securely locks in stowed position		
	120	(1) thumb-release latch and locking latch		
	121	Access to tray from outside the bus		
Electronic Diagnostic Hand Tool	122	Current version of engine or OEM Chassis manufacturers electronic diagnostic hand tool 8008FXLC Star XLC with WebFlash with cabling and diagnostic cards or approved equal		
Driver Shield	123	Verify driver shield opens and closes without binding.		
	124	Verify latching mechnism		
Hand Sanitizer Dispenser	125	Verify dispenser functionality		
Face Mask Dispenser	126	Verify dispenser Functionality		

Item	No.	Instruction	Check	Comments/Remarks
ROAD TEST				
General	1	Observe any abnormalities in ride, brake, steering or handling of coach.		
	2	Verify mirrors, visors, and driver's seat maintain adjustment throughout the test.		
Parking Brake	3	Deploy parking brake. Verify that the parking brake indicator functions.		
	4	When the brake is deployed, the vehicle should not move.		
	5	Release the parking brake. The indicator light should go off.		
Door Controls	6	Make sure that the doors open and close smoothly.		
	7	Verify seals around the doors and windows are airtight.		
	8	Verify the locks function.		
Acceleration	9	Verify vehicle smoothly accelerates and decelerates.		
Windshield Wipers and Washers	10	Verify mechanism is operational.		
Cruise Control	11	Verify mechanism is operational.		
Interior Climate Control	12	Verify blower is operational.		
	13	Test both the heater and the air conditioner.		

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

Problem Escalation Procedure

Intro
When a problem with any units sold under this contract or any questions concerning deliverables in the contract arise, Creative Bus Sales has a problem escalation procedure in place to quickly address your agencies concerns. There are three different groups that are responsible to ensure that any issues with the bid are addressed in a timely fashion.

Customer Care
The agencies on this contract will be able to establish the existence of a problem by contacting our Creative care department. All initial questions and concerns should be directed to creativecare@creativebussales.com or dial 410-934-3044. Our staff is available Monday thru Friday from 10am to 8pm EST. This team, comprised of five full time staff, will be able to assist with most questions and are also trained to escalate the problem if they are unable to provide complete resolution. The response time for this group is within 24 hours before they escalate the agencies concern. The Creative Care team will track and monitor all agency problems that Creative Bus Sales is made aware of and will provide documentation to the agency confirming the resolution of the problem.

Warranty Support
If our contract support group is unable to provide direction or assistance with any warranty or service related concern that your agency may have within a 24 hour period, the next level of escalation would be directed to warranty@creativebussales.com or 1-800-326-2877. Our national warranty / service staff is available from 7am to 8pm EST Monday thru Friday and includes eight service and warranty professionals that will promptly respond to your agencies concerns. Once our Service and Warranty Team has a full understanding of the concern, we request up to 10 business days to provide an accepted path for problem resolution

Contract Support
If our warranty support group is unable to provide direction or assistance with bid related concerns within in a 24 hour period, your agency should contact contractsupport@creativebussales.com or 1-844-374-8915. This group includes the Regional Sales Management team and our National Contract Management team. Your agency representative will be contacted within 24 to 48 business hours to provide answers and prompt resolution for your concerns. Once the Contract Management Team has a full understanding of the concern, we request up to 10 business days to provide an accepted path for resolution. If that path has not been provided within 10 business days after contacting our Contract Management Team, your agency can escalate the problem to our Executive Leadership Group.

Executive Team
Our Executive Leadership Group, which includes Creative Bus Sales Ownership, will work with the agency to address any unresolved concerns. If an accepted path has not been provided within 10 business days after contacting our contract support team, your agency can escalate the problem to our Executive Leadership Group by using

executiveteam@creativebussales.com. Our Executive Leadership Group, which includes Creative Bus Sales Ownership, will work with the agency to address any unresolved concerns.

If there are any changes made to our **Problem Escalation Procedure**, our Contract Support Team will provide those documents to the Contract Monitor within 10 business days of the change.

Creative Bus Sales would like to thank you and congratulate you on the purchase of your recent vehicle. We value your trust in our company and we will do our best to meet your expectations. With over 40 years of listening to our customers' needs and delivering vehicles within their budget we are one of the nation's largest dealerships. We have a dedicated nationwide network of Parts, Service, Warranty, and Customer Care departments in which our primary objective is to ensure that we continue to meet your expectations!

Below you will find an overview of your Creative Bus Sales support team in the event any issues or concerns arise.

Creative Care: Our customer care department is here to respond to your inquires or concerns about your vehicle purchase. Customer care is available to help resolve any issue that may arise over the serviceable life of your vehicle. Customer care is also your primary resource to assist you in reaching the correct department or individual that you desire to speak with. To reach our Creative Care department call 1-844-374-8915 or email creativecare@creativebussales.com

Service Department: Our service department will work diligently to ensure that your vehicles are maintained to the highest standard. Creative Bus Sales service departments welcomes our customers vehicles for any maintenance or service-related concerns. Creative Bus Sales has 15 service location located across the United States that are ready to assist you. With an appointment, our service team will make sure to get your vehicle back on the road as quickly as possible. To reach our service department call 1-800-326-2877 or email creativecare@creativebusales.com

Parts Department: Creative Bus Sales stocks a large variety of parts to ensure we have what you need to keep your vehicles operational. The parts department staff includes experienced parts sales associates, shipping and receiving associates, inventory specialists, and delivery drivers where applicable. To reach our parts department, call 1-888-993-5040 or email parts@creativebussales.com

Warranty: Our warranty department will work for you to address any warranty concerns that you have with your vehicle. Creative Bus Sales warranty department will act as liaison between the customer and chassis manufacturer to expedite a satisfactory resolution for your concerns. Our warranty department will ensure that all your warrantable concerns are corrected to the manufacturer standards. To reach your warranty department please call 1-800-326-2877 or email warranty@creativebussales.com

- If the bus has an issue during the warranty period, please contact our warranty department at warranty@creativebussales.com so that they can assist. The following information below will be needed in order to determine warranty coverage.
    - VIN
    - Mileage
    - Pictures of the issue (if applicable)

- If you are near a Creative Bus Sales location, we invite you to come and visit us for all warranty repairs. We do realize that you may not be close to any of our service locations. If that is that case our warranty team will assist in locating a repair facility that can complete the needed warranty repairs. After determining where the repairs will be completed a repair estimate must be provided to the Creative warranty team. No repairs are authorized to be completed for warranty purposes until the warranty team has approved the estimate provided.

Below you will find a list of FAQs' regarding the warranty process. If there are still questions, please do not hesitate to reach out to warranty@creativebussales.com and someone will respond promptly.

- **How long does it take for someone to respond after I contact warranty@creativebussales.com?**
    - Our targeted response time is within 24 hours however, we strive to achieve a quicker response time when possible.

- **Where can I go for Warranty service?**
    - Depending on the vehicle concern, your Warranty Administrator will discuss with you the best way to get your bus repaired. We invite you to come into any of our Creative Bus Sales service locations for any repair issues. If you are not close to one of our facilities, please contact warranty@creativebussales.com and our team will be happy to assist you in locating a manufacturer authorized warranty repair facility near your area.
    - If the issue you are experiencing is OEM (Ford, Chevy, Dodge, Freightliner, International) related such as engine, transmission or a check engine light, the bus must be taken to the appropriate manufacturer dealership in your area. Creative Bus Sales is not authorized to complete warranty repairs on any OEM related failure. Your warranty team can also assist in locating an OEM dealership that can service your vehicle. We can always be reached at warranty@creativebussales.com.

- **What procedure do I follow when Warranty repairs are made at my own facility?**
    - Warranty repairs should not be performed without contacting warranty@creativebussales.com for prior authorization. Once Creative is contacted we will acquire authorization from the manufacturer and provide you with a claim number so you can receive a credit/payment for the warranty repairs that you performed. Failure to get prior authorization before repairs are completed may result in claim denial.

- **How do I get parts for Warranty repairs performed at my own facility?**

- Please contact warranty@creativebussales.com and your warranty administrator will acquire the authorizations needed and arrange for parts to be shipped to your location at no charge. However, it is imperative that all defective parts be kept until up to 90 days after repair has been completed or otherwise notified. Neglecting to do so can result in claim denial.

- **Does Warranty cover the cost of transporting the bus to and from authorized Warranty repair centers?**
  - No, you are responsible for the cost of transporting the bus to and from the authorized Warranty service center.

- **Is towing covered under Warranty?**
  - If the failure is **OEM** related (engine, transmission, check engine light, etc.) the tow will be covered under warranty through Ford, Chevy or Dodge roadside. Again, the tow must be set up through the perspective roadside customer service line. If you need OEM roadside assistance please reach out to warranty@creativebussales.com and a warranty administrator can assist.

    Ford roadside: 1-800-241-3673

  - If the failure is related to the **aftermarket body** side of the bus towing is not covered.

- **What do I do when I have problems with the bus while under Warranty but cannot get it in for repairs right away?**
  - If you have a warranty concern that you are unable to address at the time please contact warranty@creativebussales.com so we can document the complaint with the manufacturer.

- **How long does it take to receive credit for my Warranty claims?**
  - We want to expedite the processing of your Warranty claims. We are committed to crediting you within thirty days after receipt of all the paperwork and failed parts.

Note: It is extremely important to file your Warranty claim within 30 days of the repair, or your claim could be subject to disapproval.

Reasonable Period of Time Statement

Warranty & Service

Creative Bus Sales staff work rigorously with our manufactures and parts suppliers to try to get your vehicles back up and operating within 24-48 hours. At various times certain issues may take longer to repair, however, our staff strives to meet a 48 hour repair time. Communication is the key to this being effective. The sooner and better information that can be given of the resulting issue should result in the issue being resolved in a timely manner. Unfortunately we cannot give a timeline service guarantee because there are various components and manufactures that we have to partner with along the way.

Parts

We have six primary parts locations throughout the county. This allows our company better shipping than anywhere else in the country. Due to the number of day of good weather we have seen less down time for parts to leave our facility and arrive on time to yours. All of our parts under warranty are shipped using UPS ground. Most will come from IN at our manufactures warehouses while under warranty. After the warranty period our parts warehouse will stock what you need upon request. With over $3 million in parts readily available Creative Bus Sales has what you need.

Support

In addition to the support elements outlined previously, Creative truly believe **communication is key**. In today's challenging climate, supply chains are often stretched thin and unforeseen issues arise. As the nation's largest bus dealership, CBS has the most resources and support mechanisms in place to support Fort Bend County throughout the life of the contract. Between a robust corporate service and support network and daily operations with our manufacturing partners, we are able to stay abreast of potential roadblocks coming down the pipeline and work solutions out strategically and innovatively to combat those issues. Anything identified as a potential problem would be addressed with the customer and together we would figure out a best course of action and keep open lines of dialogue going as solutions are worked out. We understand not every part of every delivery will go 100% according to plan and use those rare instances as an opportunity to learn better processes and show off our customer support capabilities. By being proactive with our combined wealth of experience and communicating often, the vast majority of issues are able to be addressed before they become problems.

Training

Creative Bus Sales strives to provide the most practical and hands on training environment for the safe operation of its vehicles. Working hand in hand with Fort Bend, Creative will expand upon and customize its vehicle training procedures (noted below) to suit the needs of the County and its operators and mechanics.

VEHICLE DEMONSTRATION

Exterior of Vehicle

Vehicle walk-around identifying various features

- Lights
- Battery Compartment
- Door operation

Interior of Van/Bus

Passenger Compartment

- Operation of the rear emergency door and in particular the

interlock
Operation of the emergency exit windows
Operation of the roof hatch
Operation of Flip/Foldaway Seats

Driver's Compartment
Location of safety equipment
Operation of Driver's Seat
Operation of Switches
Front HVAC
Rear heater
Rear A/C
Stepwell heater
Heated / remote mirrors
Intermotive Interlock
Passenger door emergency release

Wheelchair Lift
Demonstration
Operation of back-up system

Wheelchair Securement
Secure a Wheelchair Securement system

Warranty policy and procedures

Distribute & review: ***Warranty – Overview***
Distribute: ***Warranty – Ford 2023***

Chassis
Distribute and review: ***Ford – Preventative Maintenance***
Distribute and review: ***Ford – Maintenance Schedule***
Distribute: ***Ford – On-line Training***

Body
Distribute and review: ***Glaval Bus / MobilityTrans - Owner's Manual***
Distribute: ***Glaval Bus / MobilityTrans - Electrical Schematics***
Distribute: ***Glaval Bus / MobilityTrans - Parts Manual***

Wheelchair Lift
Distribute: ***WC Lift – Braun Century 2 Service Manual***
Review: Maintenance and Lubrication Schedule (pg 10-14)

Air Conditioning
Distribute: ***AC - Basics***
Distribute: ***AC- Trouble Shooting Guide***
Distribute: ***AC – Warranty Procedures***

Electrical
Watch: Intermotive FlexTech Training Video
https://intermotive.net/tutorial-videos/#flex_training

Heater
Distribute: ***Heater Maintenance***

Securement System
Distribute: ***Wheelchair Securement Use & Care***

HANDS ON DEMONSTRATION

Chassis
Identify location of all fluid check points and filters
Identify battery location and jump-start points
Identify aftermarket components

Body
Identify location of breakers, fuses and relays
Identify emergency exit locations, operation and maintenance

Wheelchair Lift
Demonstrate a Preventative Maintenance Service

Air Conditioning
Identify the areas that require Preventative Maintenance and
Explain the process

Additional Fort Bend Project Support Elements

Are included in the following pages.

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Responses to Section 26.14

(Also includes additional required technical information and descriptive material from other bid sections)

Exhibits I and II Vehicles

26.3 *(p.12)* ***Warranty****: Contractor must certify (****Attachment B****) they are prepared to perform warranty service or have arranged for service with a certified distributor in the area the vehicle will be used (must specify who); and that they can provide spare or replacement parts or can assure access to parts (must specify source).*

Spare parts source: Creative Bus Sales
4955 W. Northgate Drive
Irving, TX 75062
(469) 333-8909

Spare parts are available from the body manufacturer (Glaval Bus) and chassis manufacturer (Ford).

26.14.1 *(p.14) Description of vehicle and body equipment, including body construction procedures; chassis make and model; passenger seats; and all other pertinent information as required by the specifications or required to allow the proper evaluation to determine the responsiveness of the proposal.*

Vehicle consists of a Glaval Concorde II body on a Ford F-650 chassis. Our bid includes insulation to meet the R-8 insulation rating. Please see attached documentation for chassis details, body construction details, and component brochures/info.

26.14.2 *(p.14) Detailed floor plans with dimensions, proposed seating arrangements, the interior layout of the bus, and seat spacing between ambulatory seats (to include spacing between wheelchair positions/flip seats). Drawings, at a minimum, shall show the location and dimensions of all seating positions, driver's position, aisles, doors, modesty panels, stanchion, grab rails, tie-down locations, and other passenger assists. In addition, all major body interior and exterior dimensions, along with gross vehicle weight axle loads and gross vehicle weight rated axle loads must be shown. Separate diagrams can be provided to show seat location, lift, tie-downs, lighting, and window placement.*

Please see attached floorplan and elevation drawings.

26.14.3 *(p.14) Buses must be capable of accommodating two (2) wheelchair positions with fold-down seats able to be used when wheelchair positions are not in use.*

As specified. Please refer to attached floorplan drawing.

26.14.4 *(p.15) Vehicles must be designed and constructed to provide safe, economical, and reliable operation of demand response and fixed-route services, suitable for extended service hours in heavy stop-and-go transit service.*

Please refer to attached Construction Details (see attachments for 26.14.1). FMVSS certification, FMVSS 220 test, Altoona test, and warranty info are attached.

26.14.5 *(p.15) Overall design and construction shall be conducive to safe passenger entrance and egress and all movement within.*

Vehicle is constructed with passenger safety in mind. Vehicle meets all required FMVSS and has been Altoona tested. Interior materials are selected and finished with a eye toward passenger safety (radiused corners, padding where necessary, contrasting color selection in floor transition areas, etc.). Please see floorplan and elevation drawings for vehicle layout and dimensions. Altoona test is attached.

26.14.6 *(p.15) A weight distribution schematic and loading calculation must be shown for the floor plan.*

Please see attached weight analysis.

26.14.7 *(p.15) Loading calculations must be made with full tanks of fuel.*

Please see attached weight analysis.

26.14.8 *(p.12) The total capacity of the fuel tank.*

65 gallons

26.14.9 *(p.15) Capacity and make of alternator and batteries.*

Alternator: Ford OEM HD dual alternators - 357-amp total
Batteries: Motorcraft Dual 12-Volt 900 CCA, 1800 CCA Total

26.14.10 *(p.15) Type and size of radial tires.*

255/70R22.5H BSW AS truck tires, front and rear

26.14.11 *(p.15) Lift, securement system, and occupant restraint system information.*

Lift: Braun NCL1000-2 Century Series, NCL1000IB3454HB2, 34" x 54", 1,000 lb. Capacity

Securement System: Q'Straint Q-8101-L QRT Deluxe Retractor
Occupant Restraint System: Q'Straint Q8-6326-A1 Combination lap/shoulder belt (L-track)

Please see attached brochures and info.

26.14.12 *(p.15) Descriptive information for air conditioning equipment.*

Bid includes ACC Climate Control TC8021 Rooftop System. Please see attached information.

26.14.13 *(p.15) List of authorized service representatives for chassis, body, parts, and ancillary equipment.*

Creative Bus Sales
4955 W. Northgate Drive
Irving, TX 75062
(469) 333-8909

Creative Bus Sales
12813 Highway 64 West
Tyler, TX 75062

Helfman Ford
12220 Southwest Freeway
Stafford, TX 77477
(281) 201-4546

Mac Haik Ford
10333 Katy Freeway
Houston, TX 77024
(713) 932-5065

Creative Bus Sales also has field technicians available.

3.1 *(Exhibit, Section 3, Body) The vehicle manufacturer shall certify that its latest body design and construction method is furnished under this contract meets FMVSS 220 at a minimum.*

Please see FMVSS Self Certification and FMVSS 220 test (see attachments for 26.14.4).

10.2.1 *(Exhibit, Section 10.2.1, Transmission) Automatic transmission with overdrive, latest model available. Specify speed.*

Ford TorqShift HD 6-speed automatic transmission – double overdrive with tow/haul

10.5.2 *(Exhibit, Section 10.5.2, Fuel Tank) Fuel tanks shall have the maximum capacity as offered by the manufacturer. Contractor shall specify capacity with proposal.*

65 gallons

10.10.5 *(Exhibit, Section 10.11.1, Brakes) If four-wheel disc brakes are supplied, specify the type and location of the parking brake.*

Bid includes Ford OEM air brakes

10.11.1 *(Exhibit, Section 10.11.1, Electrical System) Dual alternator systems will be allowed but must be identified in the proposal for consideration.*

Bid includes Ford OEM HD dual alternators - 357-amp total

11.1.19 *(Exhibit, Section 11.1.19, Heating/Air Conditioning/Defrosting Requirements) If booster pumps are not required, the contractor is to explain why.*

Bid includes booster pump.

15.1 *(Exhibit, Section 15.1, Step and Stepwell) Contractor will provide step height if a flat floor floorplan is provided.*

Floorplan is not a flat floor configuration.

18.2.2 *(Exhibit, Section 18.2.2, Exterior) Rear exterior light configuration shall be submitted with a proposal package for approval by the County.*

Please see elevation drawing for exterior light configuration.

23.1 *(Exhibit, Section 23.1, Wheelchair Securement System) Actual Sure-Lok or Q'Straint models of securement and anchor systems will be identified and priced by the contractor in the Wheelchair Securement System price sheet section.*

Securement System: Q'Straint Q-8101-L QRT Deluxe Retractor
Occupant Restraint System: Q'Straint Q8-6326-A1 Combination lap/shoulder belt (L-track)

Brochures attached for previous response to 26.14.11 above.

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

Responses to Section 26.14

(Also includes additional required technical information and descriptive material from other bid sections)

Exhibit III Vehicle

26.3 *(p.12)* ***Warranty****: Contractor must certify (****Attachment B****) they are prepared to perform warranty service or have arranged for service with a certified distributor in the area the vehicle will be used (must specify who); and that they can provide spare or replacement parts or can assure access to parts (must specify source).*

Spare parts source: Creative Bus Sales
4955 W. Northgate Drive
Irving, TX 75062
(469) 333-8909

Spare parts are also available from the chassis manufacturer (Ford).

26.14.1 *(p.14) Description of vehicle and body equipment, including body construction procedures; chassis make and model; passenger seats; and all other pertinent information as required by the specifications or required to allow the proper evaluation to determine the responsiveness of the proposal.*

Vehicle consists of a MobilityTRANS ADA upfit (wheelchair lift, interlock, passenger seats, rear floor) on a 2022 (or current model year) Ford Transit U4X chassis (148" wheelbase EL). Please see attached documents for chassis details and component brochures/info.

26.14.2 *(p.14) Detailed floor plans with dimensions, proposed seating arrangements, the interior layout of the bus, and seat spacing between ambulatory seats (to include spacing between wheelchair positions/flip seats). Drawings, at a minimum, shall show the location and dimensions of all seating positions, driver's position, aisles, doors, modesty panels, stanchion, grab rails, tie-down locations, and other passenger assists. In addition, all major body interior and exterior dimensions, along with gross vehicle weight axle loads and gross vehicle weight rated axle loads must be shown. Separate diagrams can be provided to show seat location, lift, tie-downs, lighting, and window placement.*

Please see attached floorplan and elevation drawings.

26.14.3 *(p.14) Buses must be capable of accommodating two (2) wheelchair positions with fold-down seats able to be used when wheelchair positions are not in use.*

As specified. Please refer to attached floorplan drawing.

26.14.4 *(p.15) Vehicles must be designed and constructed to provide safe, economical, and reliable operation of demand response and fixed-route services, suitable for extended service hours in heavy stop-and-go transit service.*

Please see attached FMVSS certification and warranty info.

26.14.5 *(p.15) Overall design and construction shall be conducive to safe passenger entrance and egress and all movement within.*

Vehicle body and chassis is provided by Ford and meets all required FMVSS. Interior materials are selected and finished with a eye toward passenger safety (radiused corners, padding where necessary, contrasting color selection in floor transition areas, etc.). Please see floorplan and elevation drawings for vehicle layout and dimensions (see attachments for 26.14.2).

26.14.6 *(p.15) A weight distribution schematic and loading calculation must be shown for the floor plan.*

Please see attached weight analysis.

26.14.7 *(p.15) Loading calculations must be made with full tanks of fuel.*

Please see attached weight analysis.

26.14.8 *(p.15) The total capacity of the fuel tank.*

25 Gallons

26.14.9 *(p.15) Capacity and make of alternator and batteries.*

Alternator: Ford OEM 250-amp, 3,375 watt
Batteries: Ford OEM dual batteries (Option 63E) 70AH AGM

26.14.10 *(p.15) Type and size of radial tires.*

195/75R16C 107/105R BSW (DRW) ETRO Commercial Tires (tire manufacturer varies)

26.14.11 *(p.15) Lift, securement system, and occupant restraint system information.*

Lift: Braun NCL1000-2 Century Series, NCL1000IB3454HB2, 34" x 54", 1,000 lb. Capacity
Securement System: Q'Straint QRT Deluxe
Occupant Restraint System: Q'Straint L-Pod anchors, lap belts & non-retractable shoulder belts

Please see attached brochures and info.

26.14.12 *(p.15) Descriptive information for air conditioning equipment.*

Ford OEM A/C system:

Transit Climate control performance	FRONT UNIT		REAR UNIT	
	KW	BTU	KW	BTU
Mass Flow rate (KG/H)	408		370	
Evaporator core performance	5.2	17,742.40	5.05	17,230.60
Heater core performance	9.1	31,049.20	8.8	30,025.60

26.14.13 *(p.15) List of authorized service representatives for chassis, body, parts, and ancillary equipment.*

Creative Bus Sales
4955 W. Northgate Drive
Irving, TX 75062
(469) 333-8909

Creative Bus Sales
12813 Highway 64 West
Tyler, TX 75062

Helfman Ford
12220 Southwest Freeway
Stafford, TX 77477
(281) 201-4546

Mac Haik Ford
10333 Katy Freeway
Houston, TX 77024
(713) 932-5065

Creative Bus Sales also has field technicians available.

3.2 *(Exhibit, Section 3, Body) The vehicle manufacturer shall certify that its latest body design and construction method is furnished under this contract meets FMVSS 220 at a minimum.*

Chassis/body is mass-produced van chassis built by Ford and modified within the parameters of Ford's QVM program. Vehicle meets all relevant FMVSS required by NHTSA.

4.9 *(Exhibit, Section 4.9, Brakes) If four-wheel disc brakes are supplied, specify the type and location of the parking brake.*

OEM Ford electric parking brake (rear brakes).

10.4.2 *(Exhibit, Section 10.4.2, Exterior Lighting) Rear exterior light configuration shall be submitted with a proposal package for approval by the County.*

Please see elevation drawing for exterior light configuration (see attachment for 26.14.2 above).

15.1 *(Exhibit, Section 15.1, Wheelchair Securement System) Actual Sure-Lok or Q'Straint models of securement and anchor systems will be identified and priced by the contractor in the Wheelchair Securement System price sheet section.*

Bid includes Q'Straint QRT Deluxe securement systems, L-Pod anchors, lap belts & non-retractable shoulder belts. Please see attached brochure.

Brochures attached for previous response to 26.14.11 above.

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

Letter Regarding Fasteners

Fort Bend County
Purchasing Department
Travis Annex
301 Jackson, Suite 201
Richmond, TX 77469
Attn: Cheryl Krejci

Ms. Krejci,

If awarded the contract for this procurement, Creative Bus Sales intends to meet the requirements of the bid specifications as outlined in Section 26.0 Required Certifications and Information, Item # 26.2 Fastener Specification, restated below for reference:

All items covered by these specifications shall conform to applicable SAE, U.S.S., or Metric Standards and shall be of U.S. manufacture. No counterfeit fasteners shall be permitted. Should the County find the Contractor or their suppliers providing counterfeit fasteners of any type, the Contractor may be declared in default in accordance with the contract. Fastener materials shall be compatible with materials being fastened. Where self-tapping fasteners are used, body panels shall be reinforced with steel backing, aluminum backing, or stainless-steel backing.

Sincerely,

Nick Corley | Sales Operations Manager
Creative Bus Sales, Inc.
678-428-3356
ncorley@creativebussales.com

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

Letter Regarding FMCSR & EPA Regulations

Fort Bend County
Purchasing Department
Travis Annex
301 Jackson, Suite 201
Richmond, TX 77469
Attn: Cheryl Krejci

Ms. Krejci,

The manufacturers being bid by Creative Bus Sales meet the standards of the bid specifications as outlined in Section 26.0 Required Certifications and Information, Item # 26.8 Safety Standards: Federal Motor Vehicle Safety Standards (FMVSS), restated below for reference:

The bus shall meet all applicable Federal Motor Carrier Safety Regulations (FMCSR), and the Environmental Protection State (EPA) regulations in effect at the date of manufacture and the Manufacturer shall so certify. Manufacturers must be certified by the National Traffic Safety Administration to manufacture or alter vehicles in accordance with the Code of Federal Regulations, Title 49, § 567-568. The bus must comply with all Federal Transit Administration (FTA) recommended fire safety practices to the maximum extent possible in accordance with requirements of 49 U.S.C. 5323(e).

Sincerely,

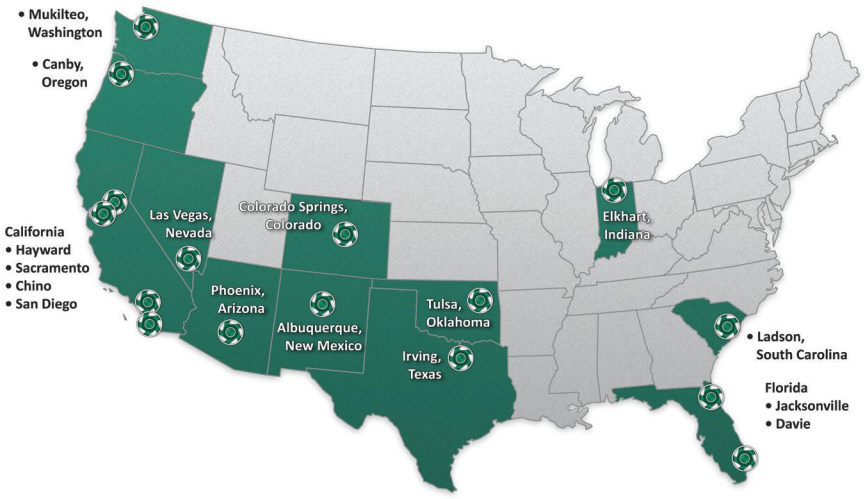
Nick Corley | Sales Operations Manager
Creative Bus Sales, Inc.
678-428-3356
ncorley@creativebussales.com

THE CREATIVE COMMITMENT

OUR PLEDGE TO YOU



Creative Bus Sales



AS A FAMILY OWNED BUSINESS with over 35 years of experience in the transportation industry, it's no coincidence that we've grown to become the nation's largest bus dealership. We offer dedicated sales, parts, and service departments to help you in all stages of bus ownership, in addition to our Creative Fleet Leasing branch for any financing needs and our Green Alternative Systems branch for any alternative fuels conversions. The Creative Commitment we present here outlines our every day practices, which ultimately guide our business so we can help to better serve you, the customer.

THE CREATIVE COMMITMENT

OUR PLEDGE TO YOU

Nation's Largest

We believe a local relationship with our customers is necessary to fully understand and fulfill their needs. That's why each CBS location is locally managed and operated.

Lifetime Commitment

We aren't here for the short-term sale. We hold a lifetime commitment to every customer with after sales service and support designed to be as convenient as possible.

Leading Performance

Our continuously high performance has led to much success in the industry. Manufacturers are pleased to work with us and often seek out partnerships because of our reputation.

Manufacturer Feedback

Equipped with over two hundred service bays nationwide and a mobile service network, we can often identify performance and service issues before the manufacturer!

Customer Needs

We can address any customer needs because of our wide selection of vehicles, our many locations, and the fact that we perform service maintenance, financing, and alternative fuels conversion.

Partner Relationships

We maintain long-term industry relationships with vendors and manufacturers. While we have added many brands to our offerings, we remain loyal to all our partners that meet our standards and our customer's expectations.

Integrity

We pride ourselves on maintaining sound and honest business practices. From the communication with the manufacturer, to the transactions with suppliers, down to the conversations with our varied customer base.

Relationship Management

We focus on developing a partnership before the sale through a transparent process that continues well after the sale. An unwavering commitment to excellence, dependable service, and nationwide networks help us to help you.

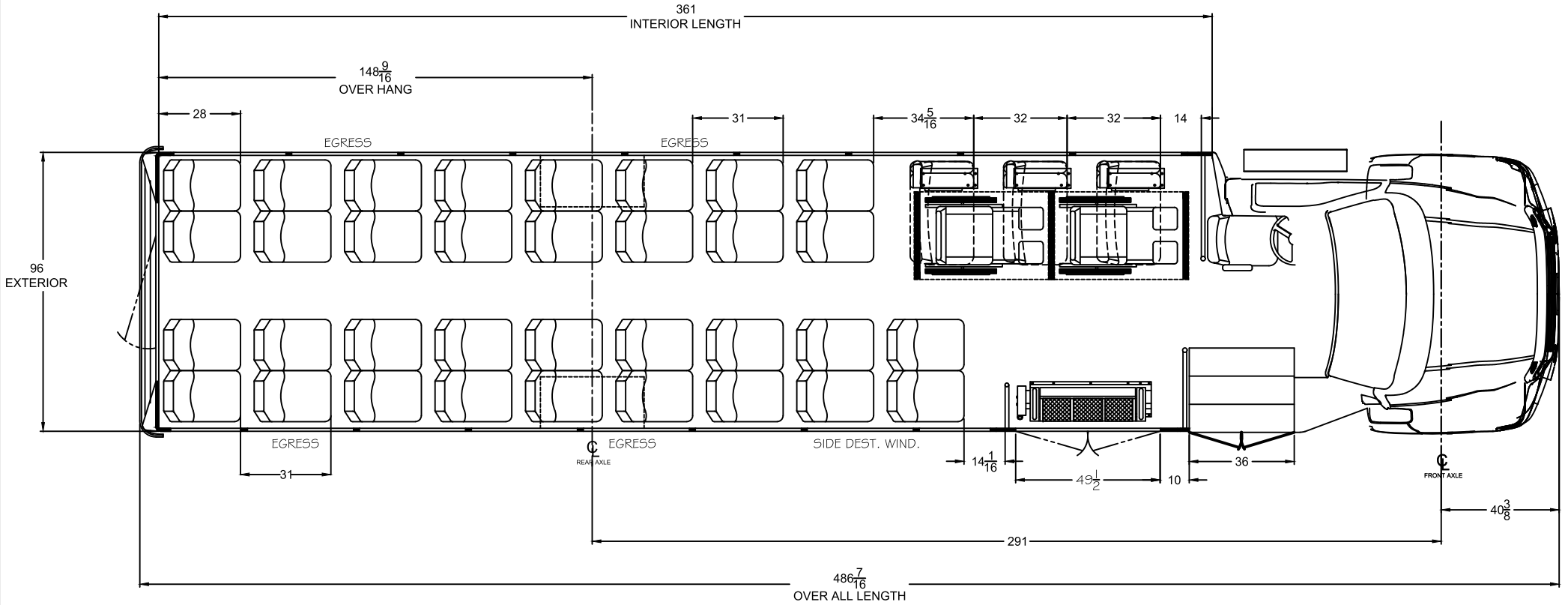
Product Development

Because of our high transaction volume we communicate regularly with many varied customers. In turn, our manufacturers know they can trust us to convey relevant information to them with customer requests and suggestions.



Call Us Today For All Your Bus Needs!

CreativeBusSales.com | 800.326.2877



NOTE: SHOWN WITH MID HI FREEDMAN SEATS
FORD F-650 CHASSIS
25,999 GVWR
THIS FLOOR PLAN IS FOR ILLUSTRATION PURPOSES ONLY.
A WEIGHT ANALYSIS HAS NOT YET BEEN PERFORMED.
FINAL APPROVAL WITH A WEIGHT ANALYSIS IS REQUIRED UPON RECEIPT OF A COMPLETED ORDER WITH ALL OPTIONS SHOWN.
OPTIONAL EQUIPTMENT MAY BE SHOWN.
THE SALES ORDER PLACED DICTATES ACTUAL OPTION CONTENT.

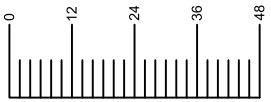
DEALER APPROVAL

☐ APPROVED

_____

CUSTOMER SIGNATURE

SCALE IN INCHES



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REV. LET.	DESCRIPTION OF CHANGE	BY	CHK	DATE	ECN No.

TOLERANCE UNLESS OTHERWISE SPECIFIED

WOOD	OTHER
± 1/8"	± 1/16"
± 1°	± 1/2°

FOREST RIVER BUS

TITLE: 34/2 W/C 291" WB 480" BDY MODEL 40 F-650 S.D. 96 WIDE

NAME: MK DATE: 03/14/22

DWG. No. 34 2 WC 3 DB FOLDS 291 480 FRB

WEIGHT ANALYSIS

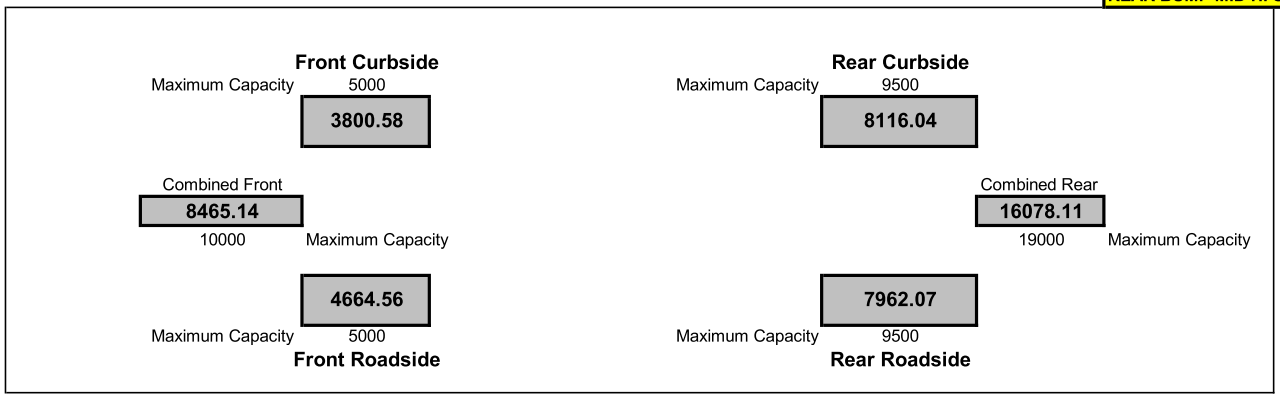
3/14/2022 34 2 WC 3 DB FOLDS 291 480 FRB WA

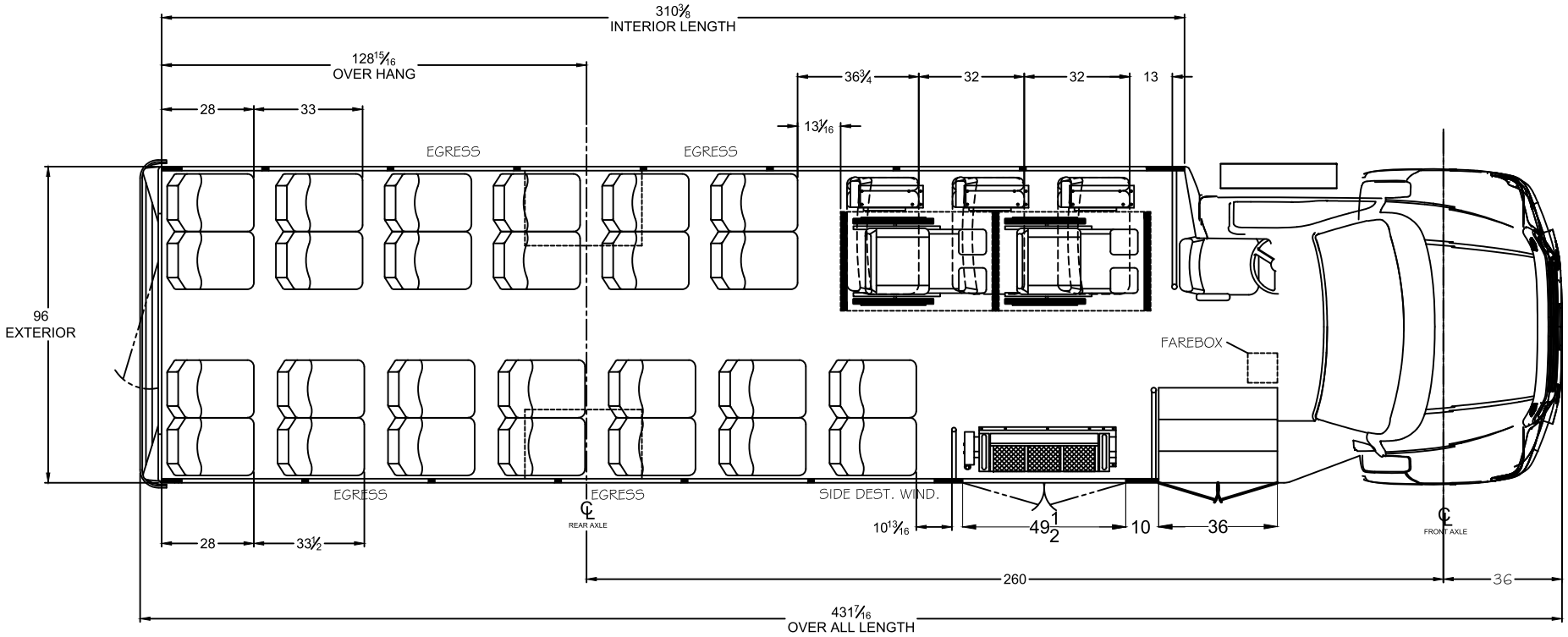
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	VEHICLE DESCRIPTION:		CHASSIS	UNIT #	MODEL:	FUEL TYPE:	FUEL CAP.	FUEL WGT PER GAL.				
			F650		XL 96	DSL	50	7.1				
	WHEELBASE	PER IN. VALUE CALC.		AXLE WEIGHTS			FUEL AMT.	WGT OF FUEL	FUEL ADJ. AMT.			
	291	0.34		LEFT FRONT	RIGHT FRONT		0.25	355	-88.75			
AXLE CAPACITIES			7926	4109	3817		FUEL TANK CENTER		DEALER			
FRONT	REAR	TOTAL		LEFT REAR	RIGHT REAR		50					
10000	19000	25999	10295	5089	5206							

LEFT (ROADSIDE)						RIGHT (CURBSIDE)					
	DISTANCE (IN.)	WEIGHT (LBS.)	% REAR AXLE	FRONT	REAR	DISTANCE (IN.)	WEIGHT (LBS.)	% REAR AXLE	FRONT	REAR	
DRIVER	40	150	13.75%	129.38	20.62	173	-55	59.45%	-22.30	-32.70	DB
DB FOLD	112	-85	38.49%	-52.29	-32.71	209	-55	71.82%	-15.50	-39.50	DB
DB FOLD	158	-85	54.30%	-38.85	-46.15	245	-55	84.19%	-8.69	-46.31	DB
DB	210	-55	72.16%	-15.31	-39.69	281	-55	96.56%	-1.89	-53.11	DB
DB	253	-55	86.94%	-7.18	-47.82	317	-55	108.93%	4.91	-59.91	DB
DB	296	-55	101.72%	0.95	-55.95	353	-55	121.31%	11.72	-66.72	DB
DB	339	-55	116.49%	9.07	-64.07	389	-55	133.68%	18.52	-73.52	DB
DB	382	-55	131.27%	17.20	-72.20	425	-55	146.05%	25.33	-80.33	DB
DB	425	-55	146.05%	25.33	-80.33			0.00%	0.00	0.00	
			0.00%	0.00	0.00			0.00%	0.00	0.00	
DB FOLD	106	385	36.43%	244.76	140.24	176	355	60.48%	140.29	214.71	DB
DB FOLD	138	385	47.42%	202.42	182.58	207	355	71.13%	102.47	252.53	DB
DB FOLD	170	385	58.42%	160.09	224.91	238	355	81.79%	64.66	290.34	DB
DB	207	355	71.13%	102.47	252.53	269	355	92.44%	26.84	328.16	DB
DB	238	355	81.79%	64.66	290.34	300	355	103.09%	-10.98	365.98	DB
DB	269	355	92.44%	26.84	328.16	331	355	113.75%	-48.80	403.80	DB
DB	300	355	103.09%	-10.98	365.98	362	355	124.40%	-86.62	441.62	DB
DB	362	355	124.40%	-86.62	441.62	393	355	135.05%	-124.43	479.43	DB
DB	393	355	135.05%	-124.43	479.43	424	355	145.70%	-162.25	517.25	DB
DB	424	355	145.70%	-162.25	517.25	263	44	90.38%	4.23	39.77	5/8M TO 3/4M PLY
5/8M TO 3/4M PLY	263	44	90.38%	4.23	39.77	339	155	116.49%	-25.57	180.57	KELDERMAN
KELDERMAN	339	155	116.49%	-25.57	180.57	263	-193.5	90.38%	-18.62	-174.88	28 GA BELLY METAL
28 GA BELLY METAL	263	-193.5	90.38%	-18.62	-174.88			0.00%	0.00	0.00	
			0.00%	0.00	0.00			0.00%	0.00	0.00	
			0.00%	0.00	0.00			0.00%	0.00	0.00	
#DIV/0! FOLD	TOTAL PASSENGER LOAD			445.31	2850.19				-126.67	2887.17	6056.00
0.00 FOLD	AXLE WEIGHTS			4109.00	5089.00				3817.00	5206.00	18221.00

	FRONT	REAR	LEFT/RIGHT TOTALS	LEFT/RIGHT %'S
LEFT	4664.56	7962.07	12626.63	0.514
RIGHT	3800.58	8116.04	11916.63	0.486
FRT / REAR TOTALS	8465.14	16078.11	24543.25	
AXLE CAPACITIES	10000	19000	25999	
AVAILABLE CAPACITIES	**1534.86**	**2921.89**	**1455.75**	

ACTUAL 101651N BIKE RACK 5/8M PLY ROMEO
REAR BUMP MID HI SEATS BELLY METAL





NOTE: SHOWN WITH MID HI FREEDMAN SEATS
FORD F-650 CHASSIS
25,999 GVWR
THIS FLOOR PLAN IS FOR ILLUSTRATION PURPOSES ONLY.
A WEIGHT ANALYSIS HAS NOT YET BEEN PERFORMED.
FINAL APPROVAL WITH A WEIGHT ANALYSIS IS REQUIRED UPON RECEIPT OF A COMPLETED ORDER WITH ALL OPTIONS SHOWN.
OPTIONAL EQUIPTMENT MAY BE SHOWN.
THE SALES ORDER PLACED DICTATES ACTUAL OPTION CONTENT.

DEALER APPROVAL

☐ APPROVED

_____

CUSTOMER SIGNATURE

SCALE IN INCHES

0 12 24 36 48

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REV. LET.	DESCRIPTION OF CHANGE	BY	CHK	DATE	ECN No.

TOLERANCE UNLESS OTHERWISE SPECIFIED

WOOD	OTHER
± 1/8"	± 1/16"
± 1°	± 1/2°

FOREST RIVER BUS

TITLE: 26/2 W/C 260" WB 310" BDY MODEL 36

NAME: MK DATE: 03/14/22

DWG. No. 26 2 WC 3 DB FOLDS 260 310 FRB

WEIGHT ANALYSIS

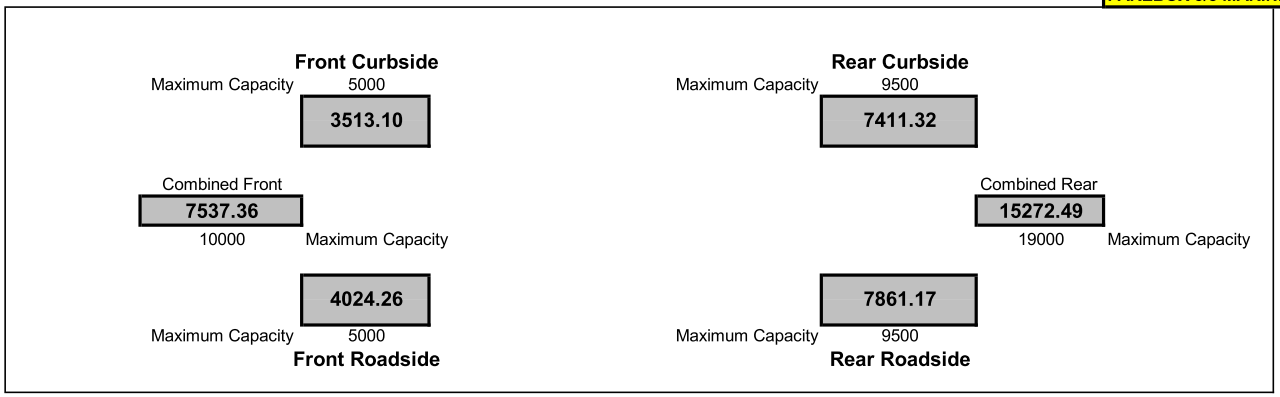
3/14/2022 26 2 WC 3 DB FOLDS 260 310 FRB WA DIESEL

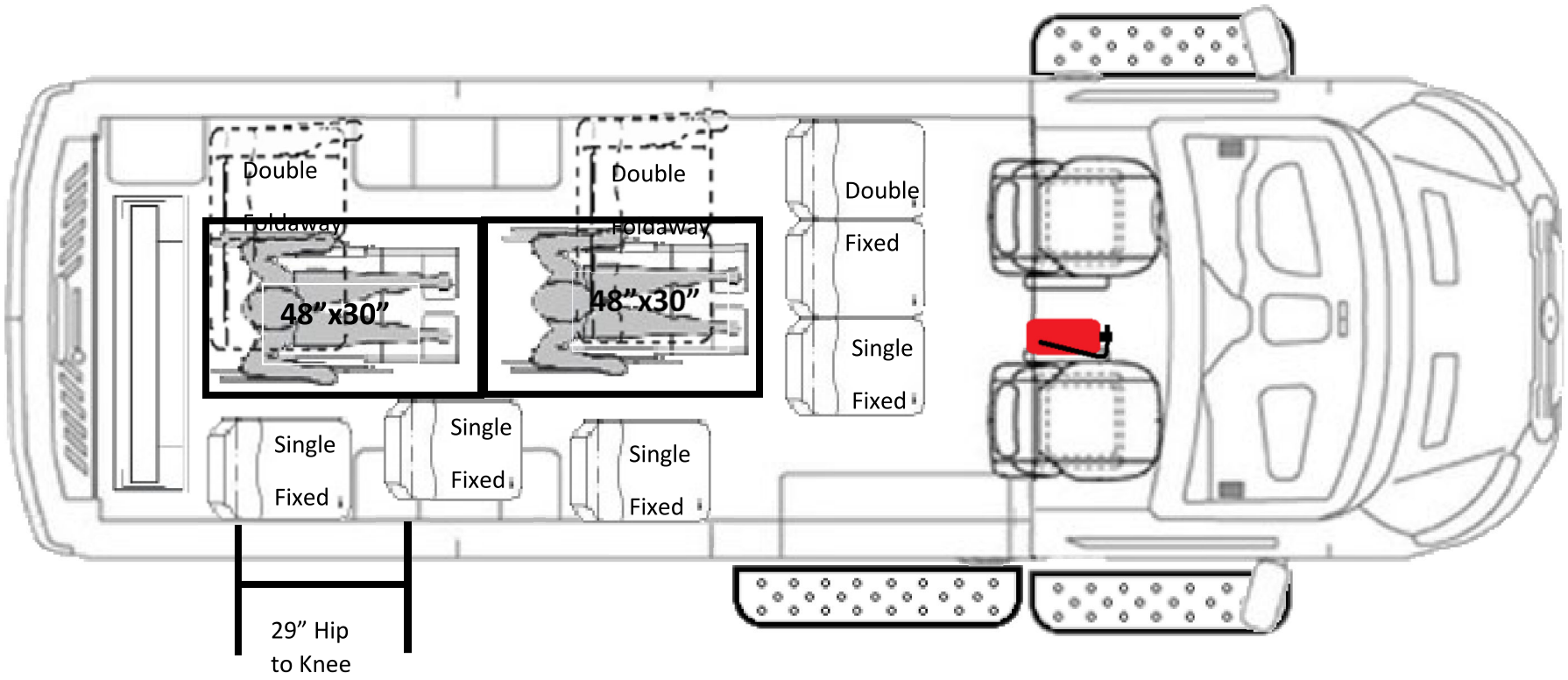
	INPUT AREAS=						FUEL LOAD ADJ. DATA (F.L.A.)				
	VEHICLE DESCRIPTION:		CHASSIS	UNIT #	MODEL:	FUEL TYPE:	FUEL CAP.	FUEL WGT PER GAL.			
			F650		XL 96	DIESEL	50	7.1			
	WHEELBASE	PER IN. VALUE CALC.		AXLE WEIGHTS			FUEL AMT.	WGT OF FUEL	FUEL ADJ. AMT.		
	260	0.38		LEFT FRONT	RIGHT FRONT		0.13	355	-46.15		
	AXLE CAPACITIES		7067	3571	3496		FUEL TANK CENTER		DEALER		
FRONT	REAR	TOTAL		LEFT REAR	RIGHT REAR		50				
10000	19000	25999	10185	5133	5052						

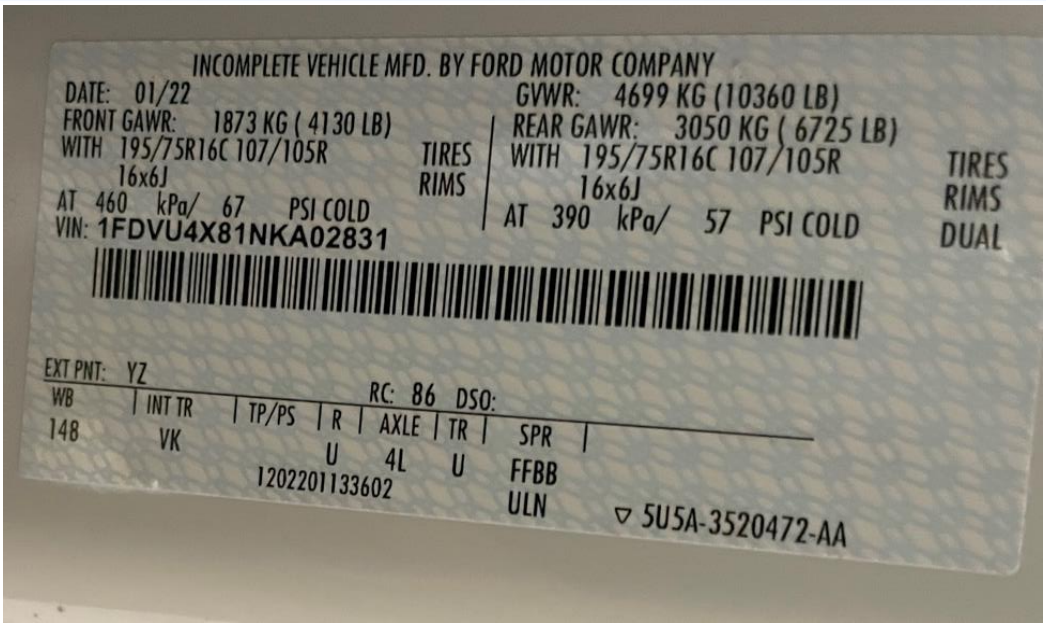
	LEFT (ROADSIDE)					RIGHT (CURBSIDE)					
	DISTANCE (IN.)	WEIGHT (LBS.)	% REAR AXLE	FRONT	REAR	DISTANCE (IN.)	WEIGHT (LBS.)	% REAR AXLE	FRONT	REAR	
DRIVER	40	150	15.38%	126.92	23.08	177	-55	68.08%	-17.56	-37.44	DB
DB FOLD	104	-85	40.00%	-51.00	-34.00	209	-55	80.38%	-10.79	-44.21	DB
DB FOLD	136	-85	52.31%	-40.54	-44.46	241	-55	92.69%	-4.02	-50.98	DB
DB FOLD	168	-85	64.62%	-30.08	-54.92	273	-55	105.00%	2.75	-57.75	DB
DB	209	-55	80.38%	-10.79	-44.21	305	-55	117.31%	9.52	-64.52	DB
DB	249	-55	95.77%	-2.33	-52.67	337	-55	129.62%	16.29	-71.29	DB
DB	289	-55	111.15%	6.13	-61.13	372	-55	143.08%	23.69	-78.69	DB
DB	329	-55	126.54%	14.60	-69.60	372	-91	143.08%	39.20	-130.20	HALF SINGLE
DB	372	-55	143.08%	23.69	-78.69			0.00%	0.00	0.00	
HALF SINGLE	372	-91	143.08%	39.20	-130.20	173	355	66.54%	118.79	236.21	DB
DB FOLD	105	385	40.38%	229.52	155.48	207	355	79.62%	72.37	282.63	DB
DB FOLD	137	385	52.69%	182.13	202.87	240	355	92.31%	27.31	327.69	DB
DB FOLD	169	385	65.00%	134.75	250.25	274	355	105.38%	-19.12	374.12	DB
DB	209	355	80.38%	69.63	285.37	307	355	118.08%	-64.17	419.17	DB
DB	242	355	93.08%	24.58	330.42	341	355	131.15%	-110.60	465.60	DB
DB	275	355	105.77%	-20.48	375.48	374	355	143.85%	-155.65	510.65	DB
DB	308	355	118.46%	-65.54	420.54	393	20	151.15%	-10.23	30.23	ROMEO REAR
DB	341	355	131.15%	-110.60	465.60	308	155	118.46%	-28.62	183.62	KELDERMAN
DB	374	355	143.85%	-155.65	510.65	238	38	91.54%	3.22	34.78	5/8 M TO 3/4 M PLY
ROMEO REAR	393	20	151.15%	-10.23	30.23			0.00%	0.00	0.00	
KELDERMAN	308	155	118.46%	-28.62	183.62			0.00%	0.00	0.00	
5/8 M TO 3/4 M PLY	238	38	91.54%	3.22	34.78			0.00%	0.00	0.00	
			0.00%	0.00	0.00			0.00%	0.00	0.00	
			0.00%	0.00	0.00			0.00%	0.00	0.00	
			0.00%	0.00	0.00			0.00%	0.00	0.00	
	TOTAL PASSENGER LOAD			328.53	2698.47				-107.62	2329.62	5249.00
	AXLE WEIGHTS			3571.00	5133.00				3496.00	5052.00	17252.00

	FRONT	REAR	LEFT/RIGHT TOTALS	LEFT/RIGHT %'S
LEFT	4024.26	7861.17	11885.43	0.521
RIGHT	3513.10	7411.32	10924.43	0.479
FRT / REAR TOTALS	7537.36	15272.49	22809.85	
AXLE CAPACITIES	10000	19000	25999	
AVAILABLE CAPACITIES	**2462.64**	**3727.51**	**3189.15**	

ACTUAL 91460D SIDE DEST WIND BIKE RACK
FAREBOX 5/8 MARINE PLY




Double
Foldaway
48”x30”
Double
Foldaway
48”x30”
Double
Fixed
Single
Fixed
Single
Fixed
Single
Fixed
Single
Fixed
29” Hip
to Knee



WEIGHT ANALYSIS WORKSHEET

(4-CORNER)

Enduser: SAMPLE	Date: 3/9/2022
VIN: 1fdvu4x81nka02831	Performed By: ROB BARNES

Max # Of Ambulatory Passengers	Max # Of Wheelchairs
12	1

OEM Wheelbase	OEM GVWR	OEM FRT GAWR	OEM RR GAWR	Fuel Type	Engine Type	Payload Capacity	Unmodified Curb Weight Front	Rear	Total
148"-EL	10360	4130	6725	Gas	3.5L Gas	2284	3093	3772	6865

	Lft-Frt (lbs)	Rt-Frt (lbs)	Lft-Rr (lbs)	Rt-Rr (lbs)	Total (lbs)
ACTUAL COMPLETED WEIGHT OF VEHICLE (UVW)	1534.44	1534.44	2584.32	2422.80	8076.00
WEIGHT OF THE OCCUPANTS (lbs)	471.50	471.50	574.00	533.00	2050.00
WEIGHT OF Full Tank Of Gas	44.10	33.08	45.68	34.65	157.50
ADJUSTED 4 CORNER WEIGHT	2050.04	2039.02	3204.00	2990.45	10283.50

TOTAL FRONT 4089.06 40.94 **TOTAL REAR** 6194.45 530.56

IS THE FRONT GAWR OVER **NO** IS THE REAR GAWR OVER **NO**

PASS/FAIL Analysis

			Is Lft-Frt/2 Exceeded?	Is Rt-Frt/2 Exceeded?
Front GAWR (lbs.)	4130	divided by 2= 2065.00	NO	NO

			Is Lft-Rr/2 Exceeded?	Is Rt-Rr/2 Exceeded?
Rear GAWR (lbs.)	6725	divided by 2= 3362.50	NO	NO

GVWR (lbs.) 10360 LOADED WEIGHT (lbs.) **10283.50** **Is GVWR Exceeded?** **NO**

76.50

Maximum UVW from Tables A & B of the Incomplete Vehicle Manual (IVM) is N/A lbs..
(NOTE: UVW does not apply to certification of vehicles with a GVWR above 10,000 lbs.)

The actual completed weight (UVW) of this vehicle is 8076.00 lbs. Is Maximum UVW Exceeded? NO

DEFINITIONS
"UVW" - Completed weight of the vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants or accessories that are normally removed when the vehicle is not in use.

"GAWR" and "GVWR" are found on the label affixed to the cover of the Incomplete Vehicle Manual (IVM).

"LOADED VEHICLE WEIGHT" - Completed weight of the vehicle with maximum capacities of all fluids necessary for operation of the vehicle plus 150 lbs. (or 70 kg.) for each designated seating position and appropriate allowance for cargo.
Vehicles with tanks for water and/or LP gas must also account for the weight of these fluids in the cargo calculations.

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

Firm Experience

1. Background and Experience

Operating 23 full-service locations, Creative Bus Sales is the largest bus dealership in the United States representing over 20 major vehicle manufacturers. The Company's team of vehicle sales representatives possess over 560 years of cumulative vehicles sales experience, resulting in 5,000+ vehicles sold nationwide every year.

Creative Bus Sales is dedicated to servicing its customers at the highest possible level. Nationwide, the Company has in excess of 270 company operated service bays dedicated to pre-delivery inspections, warranty and service work. Green Alternative Systems (GAS), a division of Creative Bus Sales,has performed over 10,000 alternative fuel conversions (CNG, Propane, and Electric). Additionally, the Company is the only dealership in the nation to possess multiple Ford-certified, Qualified Vehicle Modifier (QVM) dealership locations.

Creative Bus Sales houses a dedicated customer service department to handle all pre- and post-sales needs of its customers. The Company has a team of 25+ dedicated outside and inside parts sales representatives responsible for handling all customer parts needs. Creative Bus Sales currently holds multiple State Purchasing Contracts, a partial listing of contracts is shown below.

Nationwide Transit Contract Experience (a partial listing of significant projects)

- Orange County Transit (OCTA) — Over 950 Paratransit Buses & Vans
- City of Los Angeles (LADOT) — Over 500 Paratransit Buses
- Caltrans/DGS — Over 5,000 Paratransit Buses & Vans
- RTC Las Vegas — Over 400 Paratransit & Transit Buses
- Access Services — Over 1,000 Paratransit Mini Vans
- Dallas DART — Over 400 Paratransit Buses
- Florida (FDOT) — Over 600 Paratransit Buses & Vans
- GSA — Over 350 Paratransit Buses
- Arizona Dept of Trans (ADOT) — Over 600 Paratransit Buses & Vans
- North Carolina (NCDOT) — Over 600 Paratransit Buses & Vans
- Texas (Multiple Contracts) — Over 1,200 Paratransit Buses & Vans
- Washington (WSDOT) — Over 650 Paratransit Buses & Vans
- Oregon (ODOT) — Over 300 Paratransit Buses & Vans
- Oklahoma (Multiple Contracts) — Over 400 Paratransit Buses & Vans
- New Mexico (NMDOT) — Over 450 Paratransit Buses & Vans

Creative Bus Sales currently holds transit contracts and/or services customers in the following states: WA, OR, CA, NV, ID, MT, WY, UT, CO, AZ, NM, KS, OK, TX, IL, IN, AR, LA, MS, AL, GA, FL, NC, SC, PA, TN, MD, and MA.

Customer Service Capabilities

Creative Bus Sales' service locations are located within the contract requirements of all recipient's locations. The Creative Care and Technical team are available to assist immediately as needed. The Company has the authority to deploy internal and factory personnel from any discipline including engineering, manufacturing, parts, service and management in response to a customer's needs. No delay in problem resolution due to out of state factory personnel availability is experienced. Swift and accurate resolutions to issues and needs are achieved through factory personnel directly reviewing issues, "first hand", as they are presented.

Creative Bus Sales has excellent relations with all major component manufacturers. The Company's Service Technicians and supervisory team are certified by John Deere, Cummins, A/C Carrier, MCC, Trans Air, Thermo King, Freedman Seating, Ricon, and Braun amongst many others. Service Technicians are graduates of the Automotive Technical College and many are Automotive Service Excellence (ASE) Master Technicians.

Creative Bus Sales' Parts and Service Department is dedicated solely to the service and support of commercial and transit buses and does not service any other type of equipment, school buses or trucks. Such focus ensures an unmatched level of competency in the industry. Technical assistance can be provided immediately during business hours by contacting Creative Bus Sales service technicians. Complete description of warranty policy and procedures can be provided upon award.

With over 5,000 units sold annually, Creative Bus Sales has the largest "fleet" of vehicles in service in the nation. This gives the Company the most vehicle performance data in the industry. The Company is exposed to issues with vehicles across the country in a variety of operating conditions. This data allows the Company to recognize issues well in advance of smaller dealers that do not service the volume of vehicles Creative Bus Sales does. This translates to quicker warranty approvals and repair execution for customers, as many times the Company has already seen the issue prior to receiving the call. Additionally, our technical support team has an information sharing process that communicates common issues and repairs, resulting in reduced troubleshooting times frames and quicker repairs. All of this allows the Company to get customer vehicles back up and running in the quickest manner possible, minimizing downtime for customers.

List of Centers

One call to our dedicated Creative Care team will initiate immediate warranty service and technical response. Creative Bus Sales is an authorized repair facility for all products represented. The Company has the authority to make on the spot decisions regarding warranty repairs and approvals. In addition to the Company operated facilities, local warranty repair facilities will be authorized to perform the required repair on an as needed basis. Our intent is to make all warranty and service as local as possible while providing the customer with the best possible service. Our team of certified technical advisors are available to assist with any necessary troubleshooting efforts. This ensures less downtown and a better overall experience to the end users.

Spare Parts and Inventory Levels

A critical part of the project is a quick response time to service assistance and parts supply. Creative Bus Sales operates dedicated parts warehousing operations with over 60,000 square feet of capacity and $10,000,000 worth of inventory. The Company stocks significant parts supply at all its locations. In addition, the Company operates dedicated parts warehouses in Arizona, California, Florida, Indiana, Georgia, Pennsylvania, and Texas.

One call to our Parts Department will facilitate the end user's needs. With 25+ dedicated employees, Creative Bus Sales' Parts Department has over sixty years of cumulative experience in this field. Most parts can be shipped within twenty-four hours of order. Complete description of parts policy and procedures can be provided upon award.

Inspection procedures

Due to Creative Bus Sales' proximity to manufacturers locations, the Company has inspectors on site during vehicle builds. The Company has a team of inspectors located in Elkhart, Indiana that visits manufacturer facilities on an ongoing basis. This allows the Company to catch any potential issues during the build process, prior to customer receipt. Once completed at the manufacturer, vehicles are delivered to a Company location for additional inspection. In many cases these vehicles flow through Creative Bus Sales' Elkhart inspection facility immediately following completion. The Elkhart facility is over 50,000 square feet and processes deliveries of approximately 1,500 vehicles yearly. Any issues identified can be repaired in house or sent back to the manufacturer for repair. Next, vehicles are shipped to one of the Company's local facilities for final PDI (Pre-Delivery Inspection). This additional inspection allows the Company to catch any issues that may have occurred during the initial driving period of the vehicle. Any deficiency noted shall be repaired before delivery. All documents required under the contract shall be provided upon delivery or pickup. The Company inspection processes mentioned above are all in addition to any inspections performed by the manufacturer and/or line inspectors hired by the end user.

2. Key Personnel and Experience

Executive Management Team

- Tony Matijevich | President
- J.R. Sauder | Senior Vice President
- TJ Matijevich | Vice President & General Manager
- Mark Matijevich | Vice President of Operations
- Ryan Frost | General Manager
- Jeff Johnson | Transit Sales Lead
- Nick Corley | Sales Operations Manager

3. Fiscal Responsibility

With a 40 year history, 23 locations nationwide, and 350+ employees, Creative Bus Sales has the necessary longevity and financial stability to service any contract of any size. Since 1980, the

Company has grown to service customers in nearly every state in the U.S. More than 50% of the Company's facilities are owned facilities, not leased properties, with significant investment in renovations, equipment, and employees.

Creative Bus Sales has long standing relationships with vehicle floorplan providers and banking partners. Floorplan relationships go back 20+ years and the same goes for its banking relationships. The Company has achieved increased revenue, sales, and transaction growth year over year for the past 10+ years.

4. Delivery Performance

Creative Bus Sales prides itself on delivering vehicles on time with all specifications met. The Company has not paid liquidated damages on any transit contract in the past five (5) years.

5. Ownership History and Statement Regarding Judgements and Violations

Orginially founded in 1980 as Creative Transportation Systems (CTS), the Company was later renamed Creative Bus Sales in 1990. The current owner, Tony Matijevich, purchased the Company in 1993 and it has been family-owned and operated since. Prior to purchasing Creative Bus Sales, Tony was the President of ElDorado National, the largest manufacturer of small and mid-size buses in the nation at the time. Under the current leadership and vision, Creative Bus Sales has become the largest-volume small, mid and large-size bus and van dealership in the United States. Over the past 40 years, the Company has expanded its scope through a combination of dealer acquisitions and organic growth.

Creative Bus Sales was incorporated in the State of California in 1993 under the current ownership. Creative Bus Sales has had no judgments, litigation, licensing violations or other violations outstanding or resolved against it within the past five (5) years.

6. Additional Information

Creative Bus Sales Nationwide Locations:

1. Chino, CA
2. Sacramento, CA
3. Canby, OR
4. Mukilteo, WA
5. Phoenix, AZ
6. Albuquerque, NM
7. Colorado Springs, CO
8. Irving, TX
9. Lewisville, TX
10. Tyler, TX
11. Rogers, AR
12. Slidell, LA
13. Jackson, MS
14. Elkhart, IN
15. Buffalo, NY
16. Canonsburg, PA
17. Carlsdadt, NJ
18. Hudson, NH
19. Jacksonville, FL
20. Davie, FL
21. Orlando, FL
22. Charlotte, NC
23. College Park, GA

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

March 11, 2022
Bid Number: RFP 22-034
Bid Title: Purchase of Transit Vehicles for Fort Bend County Public Transportation
Bid Due Date: March 15, 2022 at 2:00pm (cst)
Attention: Purchasing Department

RE: Firm Experience and Qualifications

References
Creative Bus Sales is the largest commercial bus dealership in the United States and sells, delivers and services hundreds of buses per year to agencies and companies in Texas and throughout the United States. Creative Bus Sales has held several State Contracts over the last 21 years and has delivered several thousand State contract vehicles during this time.

Please find below three (3) references. Each partnership was for vehicles meeting Federal Transit Administration requirements for Public Transportation within the last five years.

1. **San Antonio VIA Metropolitan**
    a. Address: 1720 North Flores Street, San Antonio, Texas, 78212
    b. Contact Name: Danny Rodriguez
    c. Contact Email: Daniel.rodriguez@viainfo.net
    d. Contact Number: 210-238-7777
    e. Delivery Detail: Delivered 124 Glaval Universals LPG Buses delivered in 2021, have been providing VIA buses for the last 12 years
    f. Currently preparing an additional order for 15 buses

2. **Houston Metro (Metropolitan Transit Authority of Harris County)**
    a. Address: 1900 Main Street, Houston, Texas, 77002
    b. Contact Name: Andrei Dragomir
    c. Contact Email: Andrei.Dragomir@ridemetro.org
    d. Contact Number: 281-660-9973
    e. Delivery Detail: Delivered over 360 Glaval Universal buses over the last 9 years. Last 40 buses were delivered in 2020.
    f. Received two additional orders in late 2021, one for 10 electric Glaval buses as well as 45 Glaval gasoline buses to be delivered in 2022.

3. **Corpus Christi RTA (Corpus Christi Regional Transportation Authority)**
    a. Address: 602 North Staples Street, Corpus Christi, Texas, 78401
    b. Contact Name: Derrick Majchszak
    c. Contact Number: Direct: (361) 903-3484, Office: (361) 289-2712
    d. Contact Email: dmajchszak@ccrta.org
    e. Delivery Detail: Delivered over 100 Arboc buses, both CNG and Gasoline over the last 8 years. Last 23 buses were delivered in 2021.
    f. Received an additional order in 2021 for 13 additional Arboc buses.

The Creative Team

Creative Bus Sales
THE NATION'S LARGEST BUS DEALER SINCE 1980

March 11, 2022

Bid Number: RFP 22-034
Bid Title: Purchase of Transit Vehicles for Fort Bend County Public Transportation
Bid Due Date: March 15, 2022 at 2:00pm (cst)
Attention: Asha Parks

RE: Firm Experience and Qualifications

Liens, Fleet Defect History, Warranty Claims

Creative Bus Sales is the largest commercial bus dealership in the United States and sells, delivers and services hundreds of buses per year to agencies and companies in Texas and throughout the United States. Creative Bus Sales has held several State Contracts over the last 21 years and has delivered several thousand State contract vehicles during this time.

Operating with integrity and values, our goal is to consistently create a seamless buying experience before, during, and after the sale of the vehicle(s). Therefore, we put together a dedicated team of experts and service professionals who are committed to serving our customers to the best of our ability. We recognize that our success lies in the relationships that are created with our customers and these relationships play a vital role in our day to day and long-term strategic decisions. Keeping our customers' needs at the forefront of our business has been the foundation to our long-term success.

Liens/Fleet Defect History
Creative Bus Sales was incorporated in the State of California in 1993 under the current ownership. Creative Bus Sales has had no judgments, litigation, licensing violations or other violations outstanding or resolved against it within the past five (5) years.

Warranty Claims
CBS, Inc. has no outstanding warranty claims or liens over the past five (5) years that have been unresolved. With the most buses on the road, Creative is the first to learn of any product issues that arise. We can
address them immediately through our dedicated nationwide network of Parts, Service, Warranty, and Customer Service Departments. Our warranty department will work for you to address any warranty concerns that you have with your vehicle. Creative Bus Sales warranty department will act as liaison between the customer and chassis manufacturer to expedite a satisfactory resolution for you concerns. Our warranty department will ensure that all your warrantable concerns are corrected to the manufacturer standards. To reach your warranty department please call 1.800.326.2877 or email Warranty@CreativeBusSales.com

The Creative Team

Creative Bus Sales

Statement of Financial Stability

Creative Bus Sales, Inc has been operating in the bus industry for over 25 years. The Company is the nation's largest bus dealer offering products from over 20 top commercial and school bus manufacturers

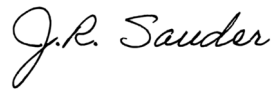
Creative Bus Sales, Inc. has a long history of fulfilling similar contracts with other transportation agencies and government procurement offices in other states including California and Florida.

Creative Bus Sales Inc. has been profitable every year since its inception. The Company continues to be financially solvent and practices a conservative expansion plan.

Creative Bus Sales maintains the largest inventory in the nation, and possesses the expertise and necessary equipment to provide adequate support to any bus fleet. The Company has multiple long-term inventory finance resources enabling it to carry sufficient inventory to fulfill the requirements of this contract.

Our financial statements are audited by an external CPA firm, and are available upon request.

If you need any further information, please do not hesitate to contact me.



J.R. Sauder
Sr. Vice President

Confidential Documents

Thank you for the opportunity to place a bid submittal with your organization. Our financial records are located in a sealed envelope in the front of each bid submittal as requested.

Please hold these documents as confidential; they are not to be considered for public release unless given written permission from a corporate official at Creative Bus Sales.

Thank you for understanding and please feel free to contact us further if more information is needed.

Organizational Chart Texas Office

Office-Immediate for Fort Bend County, Prime Personnel

Ryan Frost- General Manager (75%)
Ryan has extensive knowledge and experience with the Transit and Commercial Bus Industry he has 16+ years working with commercial bus and van manufacturers. After obtaining a BA from University of North Texas, Ryan has worked on multiple large contracts with TXDOT and FTA for transit agencies in Texas. His duties are centered on sales, operations, quality assurance, service delivery, and financial management.

Jeffrey E. Johnson- Transit Sales Representative (75%)
Jeff reports directly to Mr. Frost and will be the primary contact for this contract. Jeff has 23+ years' experience in the Transit Industry with his focus being in Fleet Maintenance, Bus Manufacturing, Engineering, Service Support, Sales and 9 years on the Texas Transit Association Board. Jeff has 5+ years of education in engineering, mechanical and electrical schooling in addition to his transit experience. His excellent reputation in the industry reflects the integrity and aggression he exhibits in the support of his customer base.

Jason Spore – Bid Analyst (50%)
Jason Spore has been in the bus industry for 22 years with 21 of those years doing bid and government functions. He attended school at Lake Washington Technical College and is regularly involved as a manufacturing liaison and ensuring transit contracts are built and delivered to the customer specifications.

Nick Corley – Sales Operations Manager (50%)
Nick Corley is the Sales Operations Manager at Creative Bus Sales and oversees transit and government contracts as well as new bid activity. After graduating from the University of Georgia with a BA in political science and philosophy, he's held a variety of roles at the bus dealership operations level, most recently as the Director of Bus Operations and Marketing with Alliance Bus Group prior to joining the Creative Team. He has 15+ years bus industry experience.

Office Support

Vikki Rinehart- Office Manager
Vikki Rinehart has been in the bus business for 9 years. Vikki has worked in multiple facets of the commercial bus business including warranty, sales coordinator, DMV coordinator, and office manager. Vikki has worked on multiple large contracts over the past 9 years.

Catherin Herrera-Sales Coordinator

Stephanie Gregory-Warranty Administrator

Service Department

Chad Darnall- Service Manager
Chad Darnall has been a technician in the commercial bus business for 9 years. Chad is a certified technician for Braun and has years of experience working on cutaway buses and Prevost buses. Chad is also certified with the Texas Railroad Commission for alternative fuels.

Rene DelaTrinidad- Shop Foreman
Rene has been with Creative Bus Sales for 15 years and has recently transferred from the corporate office in California to Texas. Rene is a ASE Certified Master Technician and is certified with International to diagnosis chassis related issues.

Bill Ashley- Technician
Bill has been a bus technician for 3 years. Bill previously worked for a CNG conversion company in Dallas installing CNG on buses. Bill is certified with the Texas Railroad Commission for alternative fuels.

Leo Aguila- Technician
Leo has been a technician for Creative Bus Sales for 6 months. Leo has previously worked for Standard Parking servicing the DFW Airport buses.

Field Service Department

Greg Fennel-Field Service Technician
Based in Dallas, TX

Javiar- Field Service Technician
Based in Dallas, TX and Houston TX

Jason Eagleson-Field Service Technician
Based in Houston, TX

Jamal's Service Center
Located in Houston Texas

Parts Department

Christian Defaria-Shipping and Receiving Clerk
Christian has worked for Creative Bus Sales for 6 months and works in the parts department as the shipping and receiving clerk.

Steve Allen- Outside Parts Sales North Texas
Steve Allen has been in the bus parts business for 17 years. Steve handles outside parts sales for Texas and Oklahoma. Steve has extensive knowledge in bus A/C parts and wheel chair lift parts.

Russell Barlow- Back Counter Parts and Inside Parts Sales
Russell Barlow has been a bus industry for 12 years. Russell works in the parts department and handles the back-counter parts for the service department and inside parts sales.

Additional Office Staff

Brent Roy- Transit Sales Representative
Brent Roy has been a commercial bus salesman for 16+ years. Brent covers parts of Northern Texas, New Mexico and Oklahoma.

Jason Roy- Senior Sales Representative
Jason Roy has been a commercial bus salesman for 9+ years. Jason has worked with transit agencies in Oklahoma and North Texas during his sales career as well as the school bus industry. Jason's primary sales focus covers transit in North Texas and Oklahoma.

Mark Ondich- School Bus Sales Texas/Oklahoma
Mark Ondich has been in the bus industry for 5+ years. Mark started with Creative Bus November 2014
and covers School Bus Sales.

Richard Garcia- Commercial Bus Sales
San Antonio, Texas

Richard Garcia has been in the bus business for 12 years. Richard has serviced Central Texas and South Texas accounts for 6 years. Richard has experience with all the commercial bus manufacturers.

Casey Gaskins-Commercial Bus Sales
Irving, TX
Casey has been in the commercial bus business for 7 years starting out as a mechanic. Casey has worked his way up to become a salesman for commercial buses in North Texas and Oklahoma.

Micah Bailey-Commercial Bus Sales
Houston, TX
Micah has been in the commercial bus business for 15 years. Micah services transit agencies in LA.

Relevant Projects

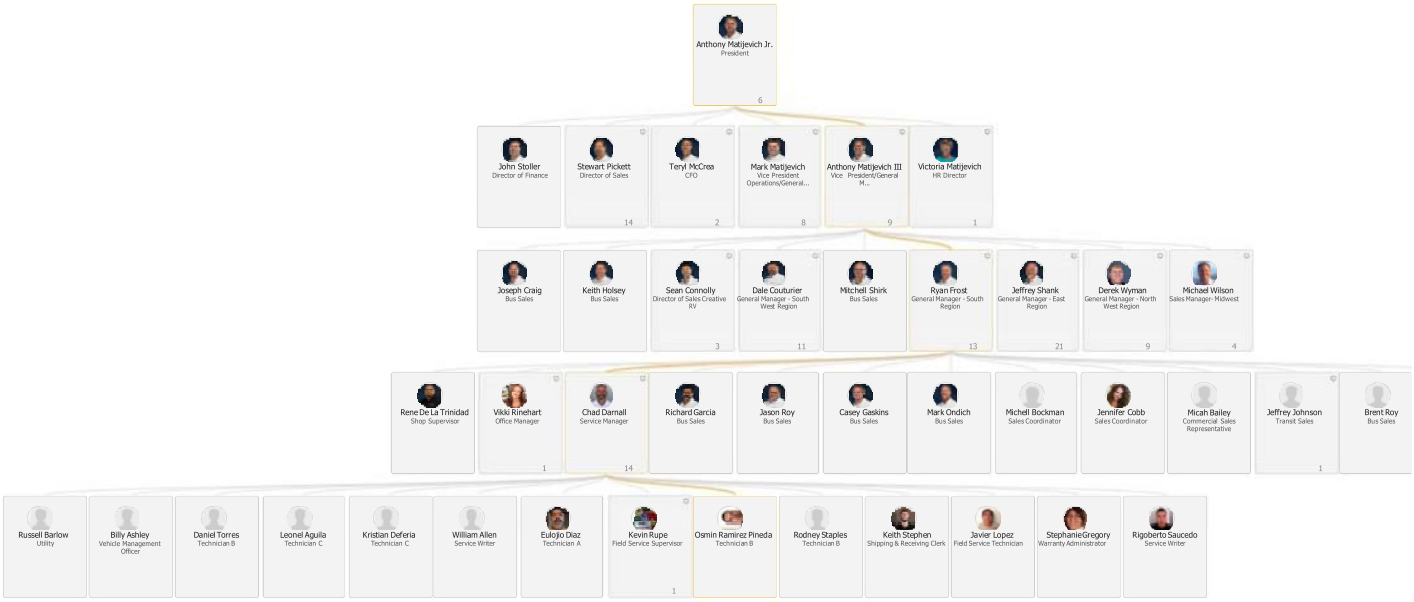
1. **San Antonio VIA Metropolitan**
    a. Address: 1720 North Flores Street, San Antonio, Texas, 78212
    b. Contact Name: Danny Rodriguez
    c. Contact Email: Daniel.rodriguez@viainfo.net
    d. Contact Number: 210-238-7777

2. **Houston Metro (Metropolitan Transit Authority of Harris County)**
    a. Address: 1900 Main Street, Houston, Texas, 77002
    b. Contact Name: Andrei Dragomir
    c. Contact Email: Andrei.Dragomir@ridemetro.org
    d. Contact Number: 281-660-9973

3. **Corpus Christi RTA (Corpus Christi Regional Transportation Authority)**
    a. Address: 602 North Staples Street, Corpus Christi, Texas, 78401
    b. Contact Name: Derrick Majchszak
    c. Contact Number: Direct: (361) 903-3484, Office: (361) 289-2712
    d. Contact Email: dmajchszak@ccrta.org

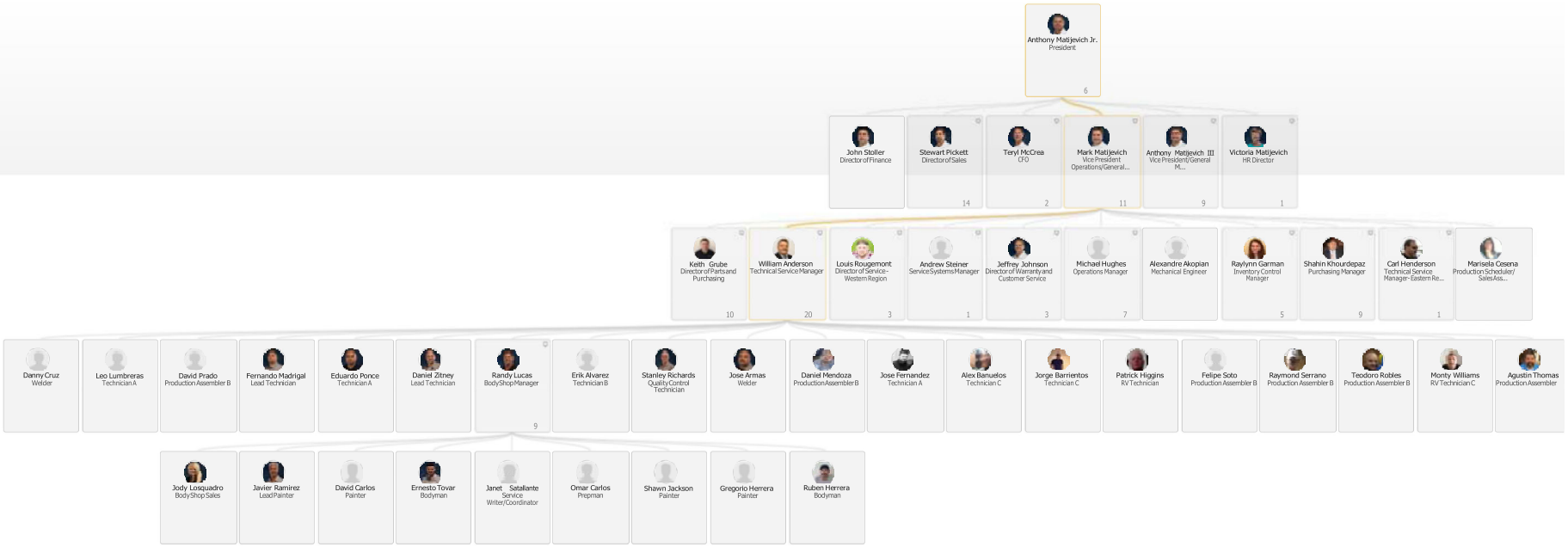
Org Chart (391)

Anthony Matijevich Jr. (President) | Levels 1 | Zoom



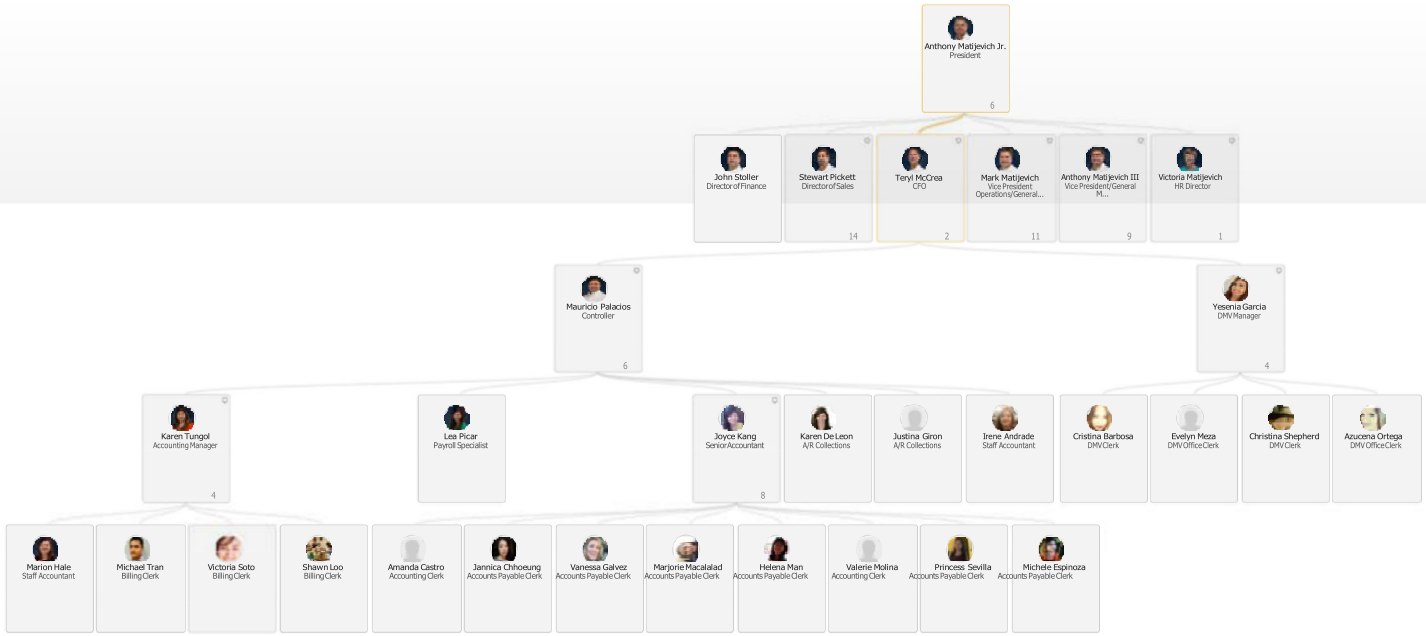
Org Chart (395)

Anthony Matijevich Jr. (President) | Levels 5 | Zoom

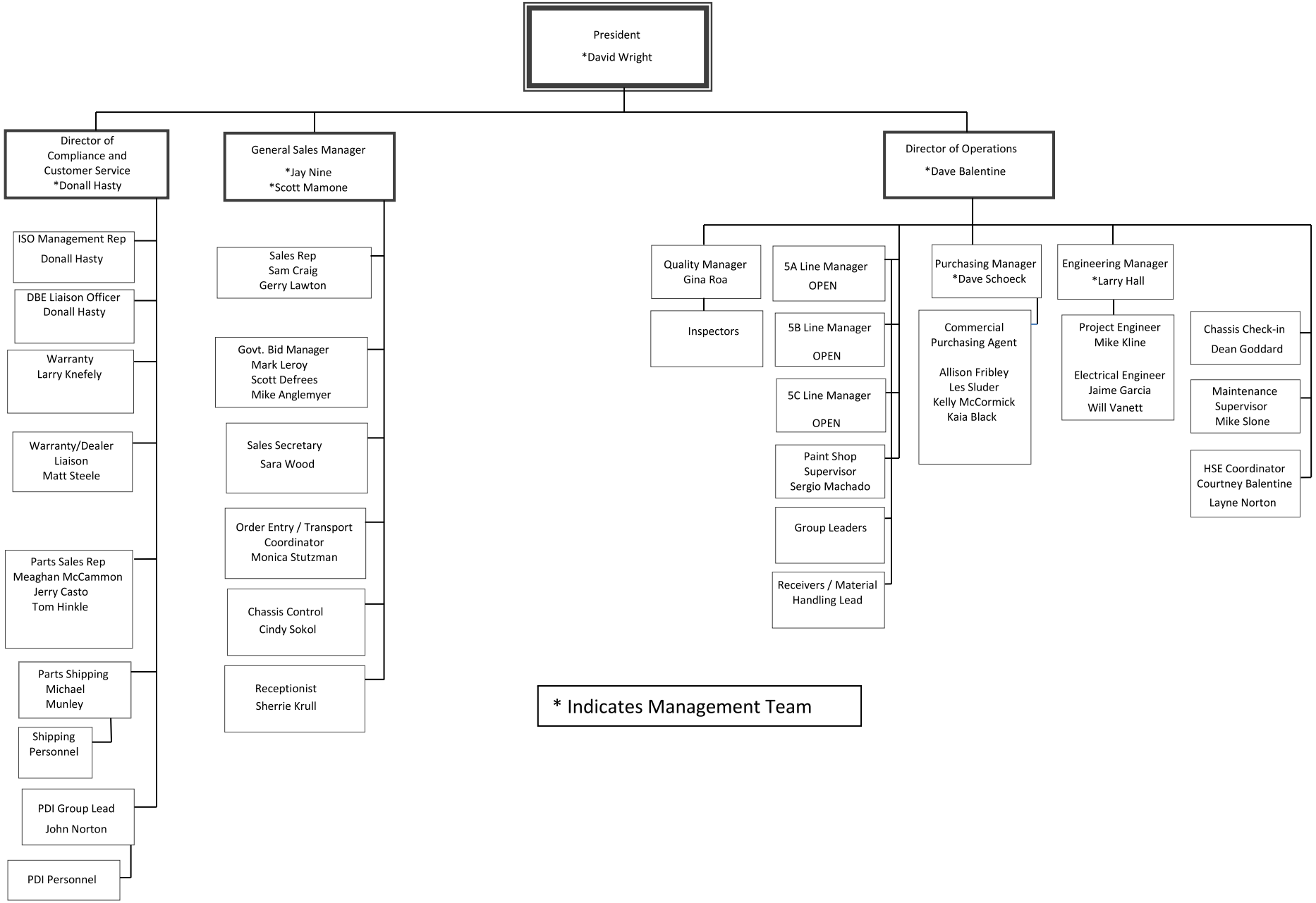


Org Chart (395)

Anthony Matijevich Jr. (President) | Levels 5 | Zoom



Manufacturing, LLC – Division 5	LDR-01-01	Rev. M
	Organizational Chart	Revised: 07/13/2021



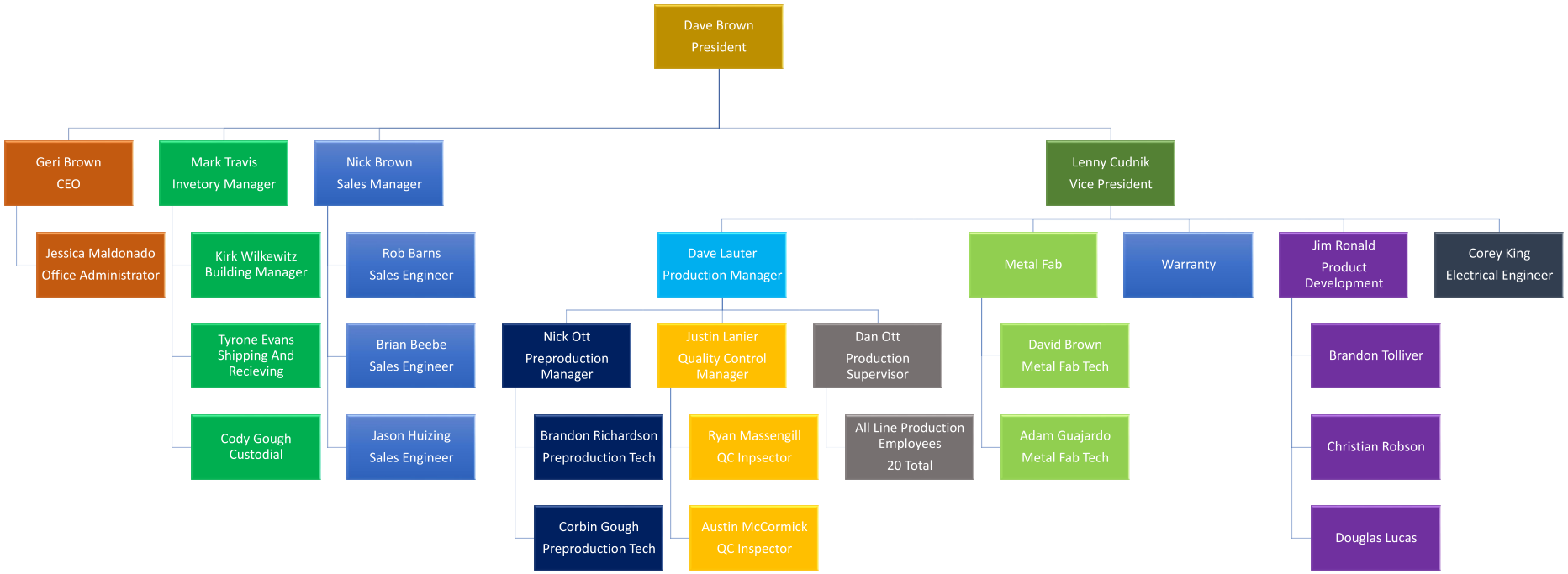

Dave Brown
President
Geri Brown
CEO
Mark Travis
Invetory Manager
Nick Brown
Sales Manager
Lenny Cudnik
Vice President
Jessica Maldonado
Office Administrator
Kirk Wilkewitz
Building Manager
Rob Barns
Sales Engineer
Tyrone Evans
Shipping And Recieving
Brian Beebe
Sales Engineer
Cody Gough
Custodial
Jason Huizing
Sales Engineer
Dave Lauter
Production Manager
Metal Fab
Warranty
Jim Ronald
Product Development
Corey King
Electrical Engineer
Nick Ott
Preproduction Manager
Justin Lanier
Quality Control Manager
Dan Ott
Production Supervisor
David Brown
Metal Fab Tech
Brandon Tolliver
Brandon Richardson
Preproduction Tech
Ryan Massengill
QC Inpsector
All Line Production Employees
20 Total
Adam Guajardo
Metal Fab Tech
Christian Robson
Corbin Gough
Preproduction Tech
Austin McCormick
QC Inspector
Douglas Lucas

EXHIBIT VI

Exhibit I

Pricing Sheet

Medium Duty Cutaway Bus, Type 11, 40 Passenger including 2 Wheelchair Positions
Ford F650/Freightliner or Approved Equal

Delivery Time: 120 days after receipt of chassis

Item No.	Item Description	Quantity	Unit Price	Extended Price
1	Medium Duty Cutaway Bus, Type 11 40 Passenger, including 2 wheelchair positions Ford F650/Freightliner (or approved equal)	1	$218,994.00	$218,994.00
2	Driver Protective Shield	1	$1,500.00	$1,500.00
3	HEPA-14 Filtration System	1	Incl. w/Item 1	Incl. w/Item 1
4	Farebox: Diamond XV Rectangular Farebox (or approved equal)	1	$2,450.00	$2,450.00
5	Emergency Kit: DOT Package (5# Fire Ext., 16 Unit F.A.K., Triangle Flare Kit, Body Fluid Clean-up Kit)	1	$230.00	$230.00
6	Security/Surveillance Camera System: SafeFleet TX6 Hybrid DVR (or approved equal)	1	$10,617.00	$10,617.00
7	Security/Surveillance Camera System: Seon Wireless Bridge: BA-032-0192 (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
8	Security/Surveillance Camera System: Seon Hard-Drive for DVR: TX-H640 (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
9	Security/Surveillance Camera System: Dash Camera Non-Infrared: SafeFleet CHQ8PD (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
10	Security/Surveillance Camera System: Interior Cameras Infrared: SafeFleet HD 1Q (or approved equal)	3	Incl. w/Item 6	Incl. w/Item 6
11	SafeFleet SRC-Router-3 Cellular/WiFi Modem (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
12	12-Volt Accessory Power: Two switched, circuit breaker	1	Incl. w/Item 1	Incl. w/Item 1
13	Bike Racks: Sportsworks DL2 (or approved equal)	1	$2,650.00	$2,650.00
14	Passenger Stop Request: Control with both audible (chime) and visual (stop request) system	1	$795.00	$795.00
15	Public Address System: Radio System permitting driver to announce stops and provide other passenger information	1	$505.00	$505.00
16	Electronic Destination Signs: Luminator Horizon SMT automatic electronic destination sign system (or approved equal)	1	$9,445.00	$9,445.00
17	Infotainment Digital Display System (2 displays/vehicle) (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
18	Automatic Voice Annunciation System	1	$10,937.00	$10,937.00
19	BraunAbility Century 2 - 1,000 lb Capacity Mobility Lift (or approved equal)	1	$6,890.00	$6,890.00
20	Pole Mounted Automatic Hand Sanitizer Dispenser	1	Incl. w/Item 1	Incl. w/Item 1
21	Disposable Mask Dispenser	1	Incl. w/Item 1	Incl. w/Item 1
22	Wheelchair Securement System	1	$1,410.00	$1,410.00
GRAND TOTAL PER VEHICLE				$266,423.00

Authorized Signature

Creative Bus Sales
Company Name

Nick Corley / Sales Operations Manager
Name and Title (Print)

3/14/22
Date

EXHIBIT II

Pricing Sheet

Medium Duty Cutaway Bus, Type 11, 32 Passenger including 2 Wheelchair Positions
Ford F550/Freightliner or Approved Equal

Delivery Time: 120 days after receipt of chassis

Item No.	Item Description	Quantity	Unit Price	Extended Price
1	Medium Duty Cutaway Bus, Type 11 32 Passenger, including 2 wheel chair positions Ford F550/Freightliner (or approved equal)	1	$213,544.00	$213,544.00
2	Driver Protective Shield	1	$1,500.00	$1,500.00
3	HEPA-14 Filtration System	1	Incl. w/Item 1	Incl. w/Item 1
4	Farebox: Diamond XV Rectangular Farebox (or approved equal)	1	$2,450.00	$2,450.00
5	Emergency Kit: DOT Package (5# Fire Ext., 16 Unit F.A.K., Triangle Flare Kit, Body Fluid Clean-up Kit)	1	$230.00	$230.00
6	Security/Surveillance Camera System: SafeFleet TX6 Hybrid DVR (or approved equal)	1	$10,617.00	$10,617.00
7	Security/Surveillance Camera System: Seon Wireless Bridge: BA-032-0192 (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
8	Security/Surveillance Camera System: Seon Hard-Drive for DVR: TX-H640 (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
9	Security/Surveillance Camera System: Dash Camera Non-Infrared: SafeFleet CHQ8PD (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
10	Security/Surveillance Camera System: Interior Cameras Infrared: SafeFleet HD 1Q (or approved equal)	3	Incl. w/Item 6	Incl. w/Item 6
11	SafeFleet SRC-Router-3 Cellular/WiFi Modem (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
12	12-Volt Accessory Power: Two switched, circuit breaker	1	Incl. w/Item 1	Incl. w/Item 1
13	Bike Racks: Sportsworks DL2 (or approved equal)	1	$2,650.00	$2,650.00
14	Passenger Stop Request: Control with both audible (chime) and visual (stop request) system	1	$795.00	$795.00
15	Public Address System: Radio System permitting driver to announce stops and provide other passenger information	1	$505.00	$505.00
16	Electronic Destination Signs: Luminator Horizon SMT automatic electronic destination sign system (or approved equal)	1	$9,445.00	$9,445.00
17	Infotainment Digital Display System (2 displays/vehicle) (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
18	Automatic Voice Annunciation System	1	$10,937.00	$10,937.00
19	BraunAbility Century 2 - 1,000 lb Capacity Mobility Lift (or approved equal)	1	$6,890.00	$6,890.00
20	Pole Mounted Automatic Hand Sanitizer Dispenser	1	Incl. w/Item 1	Incl. w/Item 1
21	Disposable Mask Dispenser	1	Incl. w/Item 1	Incl. w/Item 1
22	Wheelchair Securement System	1	$1,410.00	$1,410.00
GRAND TOTAL PER VEHICLE				$260,973.00

Authorized Signature

Creative Bus Sales
Company Name

Nick Corley / Sales Operations Manager
Name and Title (Print)

3/14/22
Date

EXHIBIT III

Pricing Sheet

Full Size ADA Van, Type 1, 12 Passenger including 2 Wheelchair Positions
Ford Transit or Approved Equal

Delivery Time: 120 days after receipt of chassis

Item No.	Item Description	Quantity	Unit Price	Extended Price
1	Full Size ADA Van, Type 1 12 Passenger, including 2 wheelchair positions Ford Transit (or approved equal)	1	$82,012.00	$82,012.00
2	Driver Protective Shield	1	$1,100.00	$1,100.00
3	HEPA-14 Filtration System	1	Included w/Item 1	Included w/Item 1
4	Farebox: Diamond XV Rectangular Farebox (or approved equal)	1	$1,676.00	$1,676.00
5	Emergency Kit: DOT Package (5# Fire Ext., 16 Unit F.A.K., Triangle Flare Kit, Body Fluid Clean-up Kit)	1	$169.00	$169.00
6	Security/Surveillance Camera System: SafeFleet TX6 Hybrid DVR (or approved equal)	1	$4,096.00	$4,096.00
7	Security/Surveillance Camera System: Seon Wireless Bridge: BA 032-0192 (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
8	Security/Surveillance Camera System: Seon Hard-Drive for DVR: TX-H640 (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
9	Security/Surveillance Camera System: Dash Camera Non- Infrared: SafeFleet CHQ8PD (or approved equal)	1	Incl. w/Item 6	Incl. w/Item 6
10	Security/Surveillance Camera System: Interior Cameras Infrared: SafeFleet HD 1Q (or approved equal)	3	Incl. w/Item 6	Incl. w/Item 6
11	SafeFleet SRC-Router-3 Cellular/WiFi Modem (or approved equal)	1	$1,513.00	$1,513.00
12	12-Volt Accessory Power: Two switched, circuit breaker	1	Included w/Item 1	Included w/Item 1
13	Passenger Stop Request: Control with both audible (chime) and visual (stop request) system	1	N/A	N/A
14	Public Address System: Radio System permitting driver to announce stops and provide other passenger information	1	$367.00	$367.00
15	Electronic Destination Signs: Luminator Horizon SMT automatic electronic destination sign system (or approved equal)	1	N/A	N/A
16	Infotainment Digital Display System (1 display/vehicle) (or approved equal)	1	$3,916.00	$3,916.00
17	Automatic Voice Annunciation System	1	N/A	N/A
18	BraunAbility Century 2 - 1,000 lb Capacity Mobility Lift (or approved equal)	1	Included w/Item 1	Included w/Item 1
19	Pole Mounted Automatic Hand Sanitizer Dispenser	1	Included w/Item 1	Included w/Item 1
20	Disposable Mask Dispenser	1	Included w/Item 1	Included w/Item 1
21	Wheelchair Securement System	1	Included w/Item 1	Included w/Item 1
GRAND TOTAL PER VEHICLE				$94,849.00

Authorized Signature

Creative Bus Sales
Company Name

Nick Corley / Sales Operations Manager
Name and Title (Print)

3/14/22
Date

COUNTY PURCHASING AGENT
Fort Bend County, Texas

Jaime Kovar
County Purchasing Agent

(281) 341-8640
Fax (281) 341-8645

March 1, 2022

TO: All Prospective Bidders

RE: Addendum No.1 – Fort Bend County RFP 22-034 – Purchase of Transit Vehicles

Addendum 1:

Attached is addendum 1. Vendors are to download, complete and provide the Addendum 1 document with their solicitation response. Due date is extended to March 15, 2022, 2:00PM. See amendments to pages; 2, 19, 143, 145, 147, and 158 of this file.

****

Immediately upon your receipt of this addendum, please fill out the following information and email this page to Olivia Rios at Olivia.Rios@fortbendcountytx.gov .

Creative Bus Sales, Inc.
Company Name

- Nick Corley — March 9, 2022
Signature of person receiving addendum — Date

If you have any questions, please contact this office.

Sincerely,

Cheryl Krejci
Senior Buyer

Attachment B

WARRANTY CERTIFICATION

The name and address of the Texas servicing dealer nearest the FOB point that will perform the warranty work for the chassis:

FIRM NAME Creative Bus Sales, Inc.	
FIRM ADDRESS 4955 West Northgate Drive, Irving, Texas, 75062	
FIRM TELEPHONE 463-333-8909	
PRINT BIDDER'S NAME Nick Corley	BIDDER'S SIGNATURE
NAME OF INDIVIDUAL TO CONTACT FOR WARRANTY Stephanie Gregory - Warranty Administrator, 463-333-8909 extension 808	

The agency may contact the vendor below for assistance in warranty administration.

FIRM NAME OF BIDDER Creative Bus Sales, Inc.
ADDRESS 4955 West Northgate Drive, Irving, Texas, 75062
TELEPHONE 463-333-8909 x808
BIDDER'S SIGNATURE
PRINT BIDDER'S NAME Nick Corley
DATE March 11, 2022

Attachment C

TRANSIT VEHICLE MANUFACTURERS CERTIFICATION OF COMPLIANCE WITH 49 CFR PART 26.49

This procurement is subject to the provisions of 49 CFR, Part 26.49. Accordingly, as a condition of permission to propose, the following certification must be completed and submitted with the RFP along **with a current copy of the manufacturer's TVM DBE Goal Concurrence/Certification Letter from FTA**.

TRANSIT VEHICLE MANUFACTURER CERTIFICATION

_____, a TVM, hereby certifies that it has complied with
(Name of Manufacturer)

the requirements of 49 CFR Part 26.49 by submitting a current DBE goal to FTA. The goals apply to Federal Fiscal Year ____, October 1, ____ to September 30, ____ and have been approved or not disapproved by FTA.

OR

Creative Bus Sales, Inc., hereby certifies that the Manufacturer of the transit vehicle to
(Name of Dealer/Distributor)

be supplied, Mobility Trans, has complied with the above-referenced
(Name of Manufacturer)

requirement of 49 CFR Part 26.49.

SIGNATURE _____

NAME Nick Corley

TITLE Sales Operations Manager

COMPANY Creative Bus Sales, Inc.

DATE March 11, 2022

Attachment C

TRANSIT VEHICLE MANUFACTURERS CERTIFICATION OF COMPLIANCE WITH 49 CFR PART 26.49

This procurement is subject to the provisions of 49 CFR, Part 26.49. Accordingly, as a condition of permission to propose, the following certification must be completed and submitted with the RFP along **with a current copy of the manufacturer's TVM DBE Goal Concurrence/Certification Letter from FTA**.

TRANSIT VEHICLE MANUFACTURER CERTIFICATION

_____, a TVM, hereby certifies that it has complied with
(Name of Manufacturer)

the requirements of 49 CFR Part 26.49 by submitting a current DBE goal to FTA. The goals apply to Federal Fiscal Year ____, October 1, ____ to September 30, ____ and have been approved or not disapproved by FTA.

OR

Creative Bus Sales, Inc., hereby certifies that the Manufacturer of the transit vehicle to
(Name of Dealer/Distributor)

be supplied, Glaval Bus, has complied with the above-referenced
(Name of Manufacturer)

requirement of 49 CFR Part 26.49.

SIGNATURE _____

NAME Nick Corley

TITLE Sales Operations Manager

COMPANY Creative Bus Sales, Inc.

DATE March 11, 2022

Attachment D

PRE-AWARD and POST DELIVERY AUDIT REQUIREMENTS CERTIFICATION

Pre-Award and Post-Delivery Audit Requirements - The Proposer agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

1. Buy America Requirements: The Proposer shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Proposer certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly. (Attachment E)

2. Solicitation Specification Requirements: The Proposer shall submit evidence that it will be capable of meeting the RFP specifications. (Attachment F)

3. Federal Motor Vehicle Safety Standards (FMVSS): The Proposer shall submit 1) manufacturer's FMVSS self-certification that the vehicle(s) comply with all applicable FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations. (Attachment G)

SIGNATURE _____

NAME Nick Corley

TITLE Sale Operations Manager

COMPANY Creative Bus Sales, Inc.

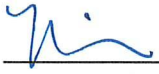
DATE March 11, 2022

Attachment E

CERTIFICATE OF COMPLIANCE
WITH BUY AMERICA ROLLING STOCK REQUIREMENTS

The Proposer hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations at 49 C.F.R. Part 661.11.

The Proposer must submit with this RFP documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

SIGNATURE 

NAME Nick Corley

TITLE Sales Operations Manager

COMPANY Creative Bus Sales, Inc.

DATE March 11, 2022

OR

CERTIFICATE OF NON-COMPLIANCE
WITH BUY AMERICA ROLLING STOCK REQUIREMENTS

The Proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

SIGNATURE _____

NAME _____

TITLE _____

COMPANY _____

DATE _____

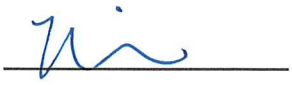
Attachment F

PROPOSER SELF CERTIFICATION

1.) The Proposer certifies that the manufactured good(s) furnished will meet or exceed the specifications, and/or that the services rendered will comply with the terms of the solicitation or contract.

2.) The Proposer certifies that it has read all of the RFP, proposal, or contract documents and agrees to abide by the terms, certifications, and conditions thereof.

Description of Commodity or Service Purchase of Transit Vehicles

SIGNATURE 

NAME Nick Corley

TITLE Sales Operations Manager

COMPANY Creative Bus Sales, Inc.

DATE March 11, 2022

Attachment G

FMVSS (FEDERAL MOTOR VEHICLE SAFETY STANDARDS) CERTIFICATION

All vehicles provided by the vendor must comply with all applicable FMVSS. The Proposer shall submit with this RFP:

1) Manufacturer's self-certification that the vehicle(s) will comply with all applicable Federal Motor Vehicle Safety Standards (FMVSS) for each proposed vehicle model

or

2) Manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

SIGNATURE _____

NAME Nick Corley

TITLE Sales Operations Manager

COMPANY Creative Bus Sales, Inc.

DATE March 11, 2022

Attachment H

CERTIFICATE OF COMPLIANCE
WITH FTA'S BUS TESTING REQUIREMENTS

The Proposer certifies that the vehicle(s) offered in this procurement comply with 49 U.S.C. § 5323(c) and FTA's implementing regulation at 49 CFR Part 665, and any amendments thereto, according to one of the following three alternatives.

(Indicate with an "X" only one of the following statements.)

1. _X_ The vehicles offered have been tested in accordance with 49 CFR Part 665. The vehicles being sold should have the identical configuration and major components as the vehicle in the test report(s), which must be submitted with this RFP. If the configuration or components are not identical, the manufacturer shall provide with its RFP a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing.

2. ___ The vehicles offered are a new model, or with a major change in configuration or components to be acquired, and will be tested and the full bus testing report(s) and any applicable partial testing report(s) will be submitted to the Purchaser before final acceptance of the first vehicle .

3. ___ The vehicles offered have been "grandfathered" (has been used in mass transit service in the United States before October 1, 1998, and is currently being produced without a major change in configuration or components), and submits with the RFP the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

The Proposer understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a manufacturer under the procedures in 49 CFR Part 29.

Funds will not be released until the purchasing agency gets a copy of the bus test (Altoona) reports, as appropriate, per 49 CFR 665.

SIGNATURE _____

NAME Nick Corley

TITLE Sales Operations Manager

COMPANY Creative Bus Sales, Inc.

DATE March 11, 2022

Attachment I

CERTIFICATION
OF
RESTRICTIONS ON LOBBYING
(Required for contracts over $100,000.)

I, Nick Corley (Name), Sales Operations Manager (Title), hereby certify on behalf of the Creative Bus Sales, Inc. (Company Name), that:

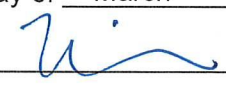
(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, regarding the award of Federal assistance, or the extension, continuation, renewal, amendment, or modification of any Federal assistance agreement, contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any application for Federal assistance, federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL: "Disclosure of Form to Report Lobbying," including information required by the instructions accompanying the form, which form may be amended to omit such information as authorized by 49 CFR Part 20.110.

(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.

The undersigned understands that this certification is a material representation of fact upon which reliance is placed and that submission of this certification is a prerequisite for providing Federal assistance for a transaction covered by 49 CFR Part 20.110. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Executed this 11 day of March, 2022.

Signed: 

Printed Name: Nick Corley

Company Name: Creative Bus Sales, Inc.

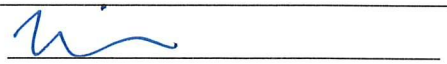
Attachment J

N/A - Creative Bus Sales, Inc. has not participated in any lobbying activities

Approved by OMB
0348-0046

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See following page for public burden disclosure)

1. Type of Federal Action: a. contract ____ b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	**2. Status of Federal Action:** a. bid/offer/application _____ b. initial award c. post-award	**3. Report Type:** a. initial filing _____ b. material change **For material change only:** Year _____ quarter _____ Date of last report_____
4. Name and Address of Reporting Entity: ____ Prime _____ Subawardee Tier_____, if Known: **Congressional District,** *if known*:	**5. If Reporting Entity in No. 4 is Subawardee,** Enter Name and Address of Prime: **Congressional District,** *if known*:	
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable*: _____	
8. Federal Action Number, *if known:*	**9. Award Amount,** *if known:* $	
10. a. Name and Address of Lobbying Registrant *(if individual, last name, first name, MI):*	**b. Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI):*	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	**Signature:**  **Print Name:** Nick Corley **Title:** Sales Operations Manager **Telephone No.:** 678-428-3356 **Date:** March 11, 2022	
Federal Use Only	**Authorized for Local Reproduction** **Standard Form - LLL (Rev. 7-97)**	

Attachment K

CERTIFICATION REGARDING GOVERNMENT-WIDE DEBARMENT AND SUSPENSION

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Bidder/Offeror is required to verify that none of the contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Bidder/Offeror is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by Fort Bend County. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to Fort Bend County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

DATE March 11, 2022

SIGNATURE

COMPANY Creative Bus Sales, Inc.

NAME Nick Corley

TITLE Sales Operations Manager

Consolidated Certification Form

This form is to assist subrecipients with managing the federal and state clauses related to the procurement they're interested in completing. This document complies with all pertinent federal and state regulations for each procurement type.

To begin, select the procurement's funding source. If TxDOT is the pass-through entity (Direct Recipient), both Federal and State must be checked.

☒ Federal and State ☐ State Only

Federal Clauses – Procurement Types Summary:

All FTA-Assisted Third-Party Contracts and Subcontracts

1. No Federal Government Obligations to Third Parties
2. Access to Third Party Contract Records
3. Changes to Federal Requirements
4. Civil Rights (EEO, Title VI & ADA)
5. Incorporation of FTA Terms
6. Energy Conservation
7. Veterans Preference
8. False or Fraudulent Statements or Claims
9. Disadvantaged Business Enterprises (DBE)
10. Fly America
11. ADA Access
12. Special Notification Requirements for States

Award Exceeding $10,000

13. Terminating the Contract

Award Exceeding $25,000

14. Debarment and Suspension

☐ **Award Exceeding $50,000**

15. Contracting with the Enemy

☐ **Award Exceeding $100,000**

16. Resolution of Disputes, Breaches, or Other Litigation
17. Lobbying Restrictions

☒ **Award Exceeding $150,000**

18. Environmental Protection (Clean Air and Water Pollution Control)

All FTA-ASSISTED THIRD-PARTY CONTRACTS AND SUBCONTRACTS

1. No Federal Government Commitment or Liability to Third Parties

Except as the Federal Government expressly consents in writing, the Recipient agrees that:

A. The Federal Government does not and shall not have any commitment or liability related to the Underlying Agreement, to any Third-Party Participant at any tier, or to any other person or entity that is not a party (FTA or the Recipient) to the Underlying Agreement; and

B. Notwithstanding that the Federal Government may have concurred in or approved any Solicitation or Third-Party Agreement at any tier that may affect the Underlying Agreement, the Federal Government does not and shall not have any commitment or liability to any Third-Party Participant or other entity or person that is not a party (FTA or the Recipient) to the Underlying Agreement.

2. Access to Third-Party Contract Records

The Recipient agrees to require, and assures that each of its Subrecipients will require, its Third-Party Contractors at each tier to provide:

A. The U.S. Secretary of Transportation and the Comptroller General of the United States, the state, or their duly authorized representatives, access to all Third-Party Contract records (at any tier) as required under 49 U.S.C. § 5325(g); and

B. Sufficient access to all Third-Party Contract records (at any tier) as needed for compliance with applicable federal laws, regulations, and requirements or to assure.

3. Changes to Federal Requirements

The Recipient agrees to include notice in each Third-Party Agreement that:

A. Federal requirements that apply to the Recipient or the Award, the accompanying Underlying Agreement, and any Amendments thereto may change due to changes in federal law, regulation, other requirements, or guidance, or changes in the Recipient's Underlying Agreement including any information incorporated by reference and made part of that Underlying Agreement; and

B. Applicable changes to those federal requirements will apply to each Third-Party Agreement and parties thereto at any tier.

4. Civil Rights

The following Federal Civil Rights laws and regulations apply to all contracts.

A. Federal Equal Employment Opportunity (EEO) Requirements. These include, but are not limited to: a. Nondiscrimination in Federal Public Transportation Programs. 49 U.S.C. § 5332, covering projects, programs, and activities financed under 49 U.S.C. Chapter 53, prohibits discrimination on the basis of race, color, religion, national origin, sex (including sexual orientation and gender identity), disability, or age, and prohibits discrimination in employment or business opportunity. b. Prohibition against Employment Discrimination. Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and Executive Order No. 11246, "Equal Employment Opportunity," September 24, 1965, as amended, prohibit discrimination in employment on the basis of race, color, religion, sex, or national origin.

B. Nondiscrimination on the Basis of Sex. Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. § 1681 et seq. and implementing Federal regulations, "Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance," 49 C.F.R. part 25 prohibit discrimination on the basis of sex.

C. Nondiscrimination on the Basis of Age. The "Age Discrimination Act of 1975," as amended, 42 U.S.C. § 6101 et seq., and Department of Health and Human Services implementing regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, prohibit discrimination by participants in federally assisted programs against individuals on the basis of age. The Age Discrimination in Employment Act (ADEA), 29 U.S.C. § 621 et seq., and Equal Employment Opportunity Commission (EEOC) implementing regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, also prohibit employment discrimination against individuals age 40 and over on the basis of age.

D. Federal Protections for Individuals with Disabilities. The Americans with Disabilities Act of 1990, as amended (ADA), 42 U.S.C. § 12101 et seq., prohibits discrimination against qualified individuals with disabilities in programs, activities, and services, and imposes specific requirements on public and private entities. Third party contractors must comply with their responsibilities under Titles I, II, III, IV, and V of the ADA in employment, public services, public accommodations, telecommunications, and other provisions, many of which are subject to regulations issued by other Federal agencies.

E. Equal Opportunity: The Agency is an Equal Opportunity Employer. As such, the Agency agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, the Agency agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications. Under this Contract, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof.

I. Nondiscrimination. In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

II. Race, Color, Religion, National Origin, Sex. In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

III. Age. In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

IV. Disabilities. In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. §5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

V. Promoting Free Speech and Religious Liberty. The Contractor shall ensure that Federal funding is expended in full accordance with the U.S. Constitution, Federal Law, and statutory and public policy requirements: including, but not limited to, those protecting free speech, religious liberty, public welfare, the environment, and prohibiting discrimination.

5. Incorporation of Federal Transit Administration (FTA) Terms

The provisions within 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 the current FTA Circular 4220 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 Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any request which would cause a violation of the FTA terms and conditions.

6. Energy Conservation

The Recipient agrees to, and assures that its Subrecipients will, comply with the mandatory energy standards and policies of its state energy conservation plans under the Energy Policy and Conservation Act, as amended, 42 U.S.C. § 6321 et seq., and perform

an energy assessment for any building constructed, reconstructed, or modified with federal assistance required under FTA regulations, "Requirements for Energy Assessments," 49 C.F.R. part 622, subpart C.

7. Veterans Preference

As provided in 49 U.S.C. § 5325(k), to the extent practicable, the Recipient agrees and assures that each of its Subrecipients:

A. Will give a hiring preference to veterans, as defined in 5 U.S.C. § 2108, who have the skills and abilities required to perform construction work required under a Third-Party Contract in connection with a Capital Project supported with federal assistance appropriated or made available for 49 U.S.C. chapter 53; and

B. Will not require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

8. False or Fraudulent Statements or Claims

A. Civil Fraud. The Recipient acknowledges and agrees that:

I. Federal laws, regulations, and requirements apply to itself and its Underlying Agreement, including 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.

II. By executing the Underlying Agreement, the Recipient certifies and affirms to the Federal Government the truthfulness and accuracy of any claim, statement, submission, certification, assurance, affirmation, or representation that the Recipient provides to the Federal Government.

III. The Federal Government may impose the penalties of the Program Fraud Civil Remedies Act of 1986, as amended, and other applicable penalties if the Recipient presents, submits, or makes available any false, fictitious, or fraudulent information.

B. Criminal Fraud. The Recipient acknowledges that 49 U.S.C. § 5323(l)(1) authorizes the Federal Government to impose the penalties under 18 U.S.C. § 1001 if the Recipient provides a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation in connection with a federal public transportation program under 49 U.S.C. chapter 53 or any other applicable federal law.

9. Disadvantaged Business Enterprises

The recipient must include assurances that third party contractors will comply with the DBE program requirements of 49 C.F.R. part 26, when applicable. The following contract clause is required in all DOT-assisted prime and subcontracts:

The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 C.F.R. part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

A. Withholding monthly progress payments;

B. Assessing sanctions;

C. Liquidated damages; and/or

D. Disqualifying the contractor from future bidding as non-responsible. 49 C.F.R. §26.13(b).

Further, recipients must establish a contract clause to require prime contractors to pay subcontractors for satisfactory performance of their contracts no later than 30 days from receipt of each payment the recipient makes to the prime contractor. 49 C.F.R. § 26.29(a). Finally, for contracts with defined DBE contract goals, each FTA recipient must include in each prime contract a provision stating that the contractor shall utilize the specific DBEs listed unless the contractor obtains the recipient's written

consent; and that, unless the recipient's consent is provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE. 49 C.F.R. § 26.53(f) (1).

10. Fly America

The recipient agrees to comply with the air transportation requirements of Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974, as amended, 49 U.S.C. § 40118, and U.S. General Services Administration (U.S. GSA) regulations, "Use of United States Flag Air Carriers," 41 C.F.R. §§ 301-10.131 – 301-10.143.

11. ADA Access

The Recipient agrees to comply with the following federal prohibitions against discrimination based on disability:

A. Federal laws, including:

I. Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, which prohibits discrimination based on disability in the administration of federally assisted Programs, Projects, or activities;

II. The Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. § 12101 et seq., which requires that accessible facilities and services be made available to individuals with disabilities:

a. For FTA Recipients generally, Titles I, II, and III of the ADA apply; but

b. For Indian Tribes, Titles II and III of the ADA apply, but Title I of the ADA does not apply because it exempts Indian Tribes from the definition of "employer;"

III. The Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., which requires that buildings and public accommodations be accessible to individuals with disabilities;

IV. Federal transit law, specifically 49 U.S.C. § 5332, which now includes disability as a prohibited basis for discrimination; and

V. Other applicable federal laws, regulations, and requirements pertaining to access for seniors or individuals with disabilities.

B. Federal regulations and guidance, including:

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

II. U.S. DOT regulations, "Nondiscrimination on the Basis of Disability in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. part 27;

III. Joint U.S. Architectural and Transportation Barriers Compliance Board (U.S. ATBCB) and 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;

IV. U.S. DOT regulations, "Transportation for Individuals with Disabilities: Passenger Vessels," 49 C.F.R. part 39;

V. U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. part 35;

VI. U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. part 36;

VII. U.S. EEOC, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. part 1630;

VIII. U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for Persons with Disabilities," 47 C.F.R. part 64, subpart F;

IX. U.S. ATBCB regulations, "Electronic and Information Technology Accessibility Standards," 36 C.F.R. part 1194;

X. FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. part 609;

XI. FTA Circular 4710.1, "Americans with Disabilities Act: Guidance;" and

XII. Other applicable federal civil rights and nondiscrimination regulations and guidance.

12. Special Notification Requirements for States

A. Types of Information. To the extent required under federal law, the State, as the Recipient, agrees to provide the following information about federal assistance awarded for its State Program, Project, or related activities:

I. The identification of FTA as the federal agency providing the federal assistance for a State Program or Project;

II. The Catalog of Federal Domestic Assistance Number of the program from which the federal assistance for a State Program or Project is authorized; and

III. The amount of federal assistance FTA has provided for a State Program or Project.

B. Documents. The State agrees to provide the information required under this provision in the following documents: (1) applications for federal assistance, (2) requests for proposals or solicitations, (3) forms, (4) notifications, (5) press releases, and (6) other publications.

Awards Exceeding $10,000

13. Termination

All contracts in excess of $10,000 must address termination for cause by the non-federal entity including the manner by which it will be effected and the basis for settlement.

Awards Exceeding $25,000

14. Debarment and Suspension

The Recipient agrees to the following:

A. It will comply with the following requirements of 2 C.F.R. part 180, subpart C, as adopted and supplemented by U.S. DOT regulations at 2 C.F.R. part 1200.

B. It will not enter into any "covered transaction" (as that phrase is defined at 2 C.F.R. §§ 180.220 and 1200.220) with any Third-Party Participant that is, or whose principal is, suspended, debarred, or otherwise excluded from participating in covered transactions, except as authorized by—

I. U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200;

II. U.S. OMB regulatory guidance, "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180; and

III. Other applicable federal laws, regulations, or requirements regarding participation with debarred or suspended Recipients or Third-Party Participants.

C. It will review the U.S. GSA "System for Award Management – Lists of Parties Excluded from Federal Procurement and Nonprocurement Programs," if required by U.S. DOT regulations, 2 C.F.R. part 1200.

D. It will ensure that its Third-Party Agreements contain provisions necessary to flow down these suspension and debarment provisions to all lower tier covered transactions.

E. If the Recipient suspends, debars, or takes any similar action against a Third-Party Participant or individual, the Recipient will provide immediate written notice to the:

I. FTA Regional Counsel for the Region in which the Recipient is located or implements the Underlying Agreement;

II. FTA Headquarters Manager that administers the Grant or Cooperative Agreement; or

III. FTA Chief Counsel.

Awards Exceeding $50,000

15. Never Contract with the Enemy

The Recipient agrees to the regulations implementing Never Contract with the Enemy in 2 CFR part 183. The regulations in 2 CFR part 183 affect covered contracts, grants and cooperative agreements that are expected to exceed $50,000 within the period of performance, are performed outside the United States and its territories, and are in support of a contingency operation in which members of the Armed Forces are actively engaged in hostilities.

Awards Exceeding $100,000

16. Resolution of Disputes, Breaches, or Other Litigation

A. FTA Interest

FTA has a vested interest in the settlement of any violation of federal law, regulation, or requirement, or any disagreement involving the Award, the accompanying Underlying Agreement, and any Amendments thereto including, but not limited to, a default, breach, major dispute, or litigation, and FTA reserves the right to concur in any settlement or compromise.

B. Notification to FTA; Flow Down Requirement

If a current or prospective legal matter that may affect the Federal Government emerges, the Recipient must promptly notify the FTA Chief Counsel and FTA Regional Counsel for the Region in which the Recipient is located. The Recipient must include a similar notification requirement in its Third-Party Agreements and must require each Third-Party Participant to include an equivalent provision in its sub-agreements at every tier, for any agreement that is a "covered transaction" according to 2 C.F.R. §§ 180.220 and 1200.220.

I. The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason.

II. Matters that may affect the Federal Government include, but are not limited to, the Federal Government's interests in the Award, the accompanying Underlying Agreement, and any Amendments thereto, or the Federal Government's administration or enforcement of federal laws, regulations, and requirements.

III. Additional Notice to U.S. DOT Inspector General. The Recipient must promptly notify the U.S. DOT Inspector General in addition to the FTA Chief Counsel or Regional Counsel for the Region in which the Recipient is located, if the Recipient has knowledge of potential fraud, waste, or abuse occurring on a Project receiving assistance from FTA. The notification provision applies if a person has or may have submitted a false claim under the False Claims Act, 31 U.S.C. § 3729 et seq., or has or may have committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bid rigging, misappropriation or embezzlement, bribery, gratuity, or similar misconduct involving federal assistance. This responsibility occurs whether the Project is subject to this Agreement or another agreement between the Recipient and FTA, or an agreement involving a principal, officer, employee, agent, or Third-Party Participant of the Recipient. It also applies to subcontractors at any tier. Knowledge, as used in this paragraph, includes, but is not limited to, knowledge of a criminal or civil investigation by a Federal, state, or local law enforcement or other investigative agency, a criminal indictment or civil complaint, or probable cause that could support a criminal indictment, or any other credible information in the possession of the Recipient. In this paragraph, "promptly" means to refer information without delay and without change. This notification provision applies to all divisions of the Recipient, including divisions tasked with law enforcement or investigatory functions.

C. Federal Interest in Recovery

The Federal Government retains the right to a proportionate share of any proceeds recovered from any third party, based on the percentage of the federal share for the Underlying Agreement. Notwithstanding the preceding sentence, the Recipient may return all liquidated damages it receives to its Award Budget for its Underlying Agreement rather than return the federal share of those liquidated damages to the Federal Government, provided that the Recipient receives FTA's prior written concurrence.

D. Enforcement

The Recipient must pursue its legal rights and remedies available under any Third-Party Agreement or any federal, state, or local law or regulation.

E. Agency Process

*Vendors may view the dispute resolution process here:

https://www.fortbendcountytx.gov/government/departments/financial-administration/purchasing-agent/fta-funded-procurements in the FTA Funded Procurements Guidelines document.

17. Lobbying Restrictions.

The Recipient agrees that neither it nor any Third-Party Participant will use federal assistance to influence any officer or employee of a federal agency, member of Congress or an employee of a member of Congress, or officer or employee of Congress on matters that involve the Underlying Agreement, including any extension or modification, according to the following:

A. Laws, Regulations, Requirements, and Guidance. This includes:

I. The Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352, as amended;

II. U.S. DOT regulations, "New Restrictions on Lobbying," 49 C.F.R. part 20, to the extent consistent with 31 U.S.C. § 1352, as amended; and

III. Other applicable federal laws, regulations, requirements, and guidance prohibiting the use of federal assistance for any activity concerning legislation or appropriations designed to influence the U.S. Congress or a state legislature; and

B. Exception. If permitted by applicable federal law, regulations, requirements, or guidance, such lobbying activities described above may be undertaken through the Recipient's or Subrecipient's proper official channels.

C. Political Activity. The Recipient agrees to comply with:

I. The Hatch Act, 5 U.S.C. chapter 15, which limits the political activities of state and local government agencies supported in whole or in part with federal assistance, including the political activities of state and local government officers and employees whose principal governmental employment activities are supported in whole or in part with federal assistance;

II. U.S. Office of Personnel Management regulations, "Political Activity of State or Local Officers or Employees," 5 C.F.R. part 151; and

III. 49 U.S.C. § 5323(l)(2) and 23 U.S.C. § 142(g), which limits the applicability of the Hatch Act, as follows:

a. The Hatch Act does not apply to nonsupervisory employees of a public transportation system, or any other agency or entity performing related functions, based upon the Award of federal assistance under 49 U.S.C. chapter 53 or 23 U.S.C. § 142(a)(2); but

b. Notwithstanding the preceding section 4(e)(3)(II) of this Master Agreement, the Hatch Act does apply to a nonsupervisory employee if imposed for a reason other than the Award of federal assistance to its employer under 49 U.S.C. chapter 53 or 23 U.S.C. § 142(a)(2).

D. Lobbying and Disclosure Certification

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.

The undersigned certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provisions of 31 U.S.C. Section 3801, et seq., are applicable thereto.

Name of Company	Printed Name of Person Completing Form
Creative Bus Sales, Inc.	Nick Corley
Date	**Signature**
March 11, 2022	

Awards Exceeding $150,000

18. Environmental Protection (Clean Air and Clean Water)

The Recipient agrees to comply with the regulations within the Clean Air Act (42 U.S.C. §§ 7401 - 7671q.) and the Federal Water Pollution Control Act (33 U.S.C. §§ 1251 - 1388), as amended. Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. §§ 7401 - 7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. §§ 1251 - 1388). Violations must be reported to the 64 Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

State of Texas Procurement Contract Clauses

State of Texas - Procurement Types Summary:

All Texas-Assisted Third-Party Contracts and Subcontracts

1. Debarment
2. Family Code Child Support Obligation Certification
3. Debts and Delinquencies Affirmations
4. Disaster Recovery Plan
5. Disclosure of Prior State Employment
6. Entities that Boycott Israel
7. Federal Executive Order 13224 Excluded Parties
8. False Statements
9. Financial Participation Prohibited Affirmation
10. Foreign Terrorist Organizations
11. Disaster Relief Contract Violation
12. Public Information Act
13. Signature Authority
14. State Auditor's Right to Audit
15. Suspension and Debarment
16. Assignment
17. Contracting Information Responsibilities
18. Human Trafficking Prohibition

1. 34 TAC §20.585 Debarment

The Recipient agrees that The State of Texas, in order to protect the interests of the state may:

A. Conduct an investigation upon a complaint regarding a contractor's acts and omissions in procurement or performance of that contract where the complaint may constitute cause for debarment;

B. Cancel one or more of the contractor's active or pending contracts upon a complaint regarding the contractor's acts and omissions in procurement or performance of that contract where the complaint may constitute cause for debarment;

C. Assess actual damages and costs incurred due to contractor's failure to perform as specified in the contract;

D. Debar a contractor for a specified period of time; and

E. Take any other action authorized by law.

2. §231.006 Family Code Child Support Obligation Certification

Under Section 231.006(d) of the Texas Family Code, the Sub-recipient certifies that the individual or business entity named in this Agreement is not ineligible to receive the specified GRANT and acknowledges that this Agreement may be terminated and payment or grant funds may be withheld if this certification is inaccurate.

3. §2252.903 Gov't Code Debts and Delinquencies Affirmations

Sub-recipient agrees that any payments due it under the Agreement shall be applied toward any debt or delinquency that is

owed to the State of Texas.

4. §444.190 Gov't Code Disaster Recovery Plan

In accordance with 13 TAC (Texas Administrative Code) §6.94(a)(9), Sub-recipient shall provide descriptions of its business continuity and disaster recovery plans

5. §2254.033 Gov't Code Disclosure of Prior State Employment

In accordance with Section 2254.033 of the Texas Government Code, relating to consulting services, RESPONDENT certifies that it does not employ an individual who has been employed by TxDOT or another agency at any time during the two years preceding the submission of the Response or, in the alternative, RESPONDENT has disclosed in its Response the following:

A. The nature of the previous employment with TxDOT or the other agency;

B. The date the employment was terminated; and

C. The annual rate of compensation for the employment at the time of its termination.

6. §2271.001 Gov't Code Entities that Boycott Israel

Pursuant to Section 2271.001 of the Texas Government Code, Sub-recipient certifies that either:

A. It meets an exception criterion under Section 2271.002, or

B. It does not boycott Israel and will not boycott Israel during the term of this Agreement.Sub-recipient shall in a writing to TxDOT state any fact(s) that make it exempt from the boycott certification.

7. Federal Executive Order 13224 Excluded Parties

Sub-recipient certifies that it is not listed on the prohibited vendors list authorized by Executive Order 13224, Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism", published by the United States Department of the Treasury, Office of Foreign Assets Control.

8. §2155.077(a)(2) Gov't Code False Statements

Sub-recipient represents and warrants that all statements and information prepared and submitted in this document are current, complete, true and accurate. Submitting a false statement or material misrepresentation made during the performance of a contract is a material breach of contract and may void this agreement.

9. §2155.004 Gov't Code Financial Participation Prohibited Affirmation

Under Section 2155.004(b) of the Texas Government Code, Sub-recipient certifies that the individual or business entity named in this Agreement is not ineligible to receive the specified agreement/GRANT and acknowledges that this agreement may be terminated, and payment withheld if this certification is inaccurate.

10. §2252.152 Gov't Code Foreign Terrorist Organizations

Sub-recipient represents and warrants that is not engaged in business with Iran, Sudan, or a foreign terrorist organization as prohibited by Section 2252.152 of the Texas Government Code.

11. §2155.006 and 2261.053 Gov't Code Prior Disaster Relief Contract Violation

Under Sections 2155.006 and 2261.053 of the Texas Government Code, the Sub-recipient certifies that the individual or business entity named in this Agreement is not ineligible to receive the specified agreement/GRANT and acknowledges that this agreement may be terminated and payment withheld if this certification is inaccurate.

12. Chapter 552, Gov't Code and §2252.907 Gov't Code Public Information Act

Information, documentation, and other material in connection with this Agreement may be subject to public disclosure pursuant to Chapter 552 of the Texas Government Code (the "Public Information Act"). In accordance with Section 2252.907 of the Texas Government Code, the Sub-recipient is required to make any information created or exchanged with the State pursuant to the Agreement and not otherwise excepted from disclosure under the Texas Public Information Act, available in a format that is accessible by the public at no additional charge to the State.

13. §2252.0012 Gov't Code Signature Authority

The Sub-recipient represents and warrants that the individual executing this Agreement is authorized to sign this Agreement on behalf of the Sub-recipient and to bind the Sub-recipient.

14. §2262.154 Gov't Code State Auditor's Right to Audit

The state auditor may conduct an audit or investigation of any entity receiving funds from the state directly under the contract or indirectly through a subcontract under the contract. The acceptance of funds directly under the contract or indirectly through a subcontract under the contract acts as acceptance of the authority of the state auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds. Under the direction of the legislative audit committee, an entity that is the subject of an audit or investigation by the state auditor must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit.

15. §2155.077 Gov't Code Suspension and Debarment

Sub-recipient certifies that it and its principals are not suspended of debarred from doing business with the State of Texas or federal government as listed on the State of Texas Debarred Vendor List as maintained by the Texas Comptroller of Public Accounts and the System for Award Management (SAM) maintained by the General Services Administration.

16. §2262.056 (b) Gov't Code Assignment

Sub-recipient shall not assign its rights under the Agreement or delegate the performance of its duties under the Agreement without prior written approval from the TxDOT. Any attempted assignment in violation of this provision is void and without effect.

17. §552.372 Gov't Code Contracting Information Responsibilities

In accordance with Section 552.372 of the Texas Government Code, Sub-recipient agrees to:

A. preserve all contracting information related to the Agreement as provided by the records retention requirements applicable to TxDOT for the duration of the Agreement,

B. promptly provide to TxDOT any contracting information related to the Agreement that is in the custody or possession of the Sub-recipient on request of TxDOT, and

C. on termination or expiration of the contract, either provide at no cost to TxDOT all contracting information related to the Agreement that is in the custody or possession of the Sub-recipient or preserve the contracting information related to the Agreement as provided by the records retention requirements applicable to TxDOT. Except as provided by Section 552.374(c) of the Texas Government Code, the requirements of Subchapter J, Chapter 552, Government Code, may apply to the Agreement and the Sub-recipient agrees that the Agreement can be terminated if the Sub-recipient knowingly or intentionally fails to comply with a requirement of that subchapter.

18. §2155.0061 Gov't Code Human Trafficking Prohibition

Under Section 2155.0061 of the Texas Government Code, the Sub-recipient certifies that the individual or business entity named in the Agreement is not ineligible to receive the specified Agreement/GRANT and acknowledges that this Agreement may be terminated and payment withheld if this certification is inaccurate.

Certification to Purchaser

1. The undersigned vendor certifies that the manufactured good(s) furnished will meet or exceed the specifications, and/or that services rendered will comply with the terms of the solicitation or contract.
2. The undersigned vendor certifies that it has read all of the bid, proposal, or contract documents and agrees to abide by the terms, certifications, and conditions thereof.

Name of Company: Creative Bus Sales, Inc.

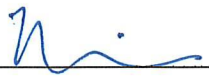
Address: 4955 West Northgate Dr., Irving, TX, 75062

Telephone: 463-333-8909

SS# or Tax ID#: 33-0388707

Printed Name of Person Completing Form: Nick Corley

Signature



Date: March 11, 2022

Description of Commodity Service: Purchase of Transit Vehicles

Disadvantaged Business Enterprise Information

Type of Organization (check the application type of organization)

☐ Sole Proprietorship ☐ General Proprietorship ☑ Corporation ☐ Limited Partnership ☐ Limited Proprietorship

Is your firm a DBE? ☐ Yes ☑ No

If yes, what type?

Third Party Procurement Contract Provisions

Third Party Procurement Contracting Provisions

Select the additional third-party procurement contracting provisions based on the type of solicitation you're procuring:

**Procurements cannot be combined. Example: Construction procurement and Rolling Stock procurement, use separate PTN 130s for each.*

- ☐ 1. **Construction Related Clauses**
  - ☐ Federal and State
  - ☐ State Clauses
- ☒ 2. **Rolling Stock Related Clauses**
  - ☒ Federal and State
  - ☐ State Clauses
- ☐ 3. **Professional Services / Architectural Engineering**
  - ☐ Federal and State
  - ☐ State Clauses
- ☐ 4. **Materials & Supplies Related Clauses**
  - ☐ Federal and State
  - ☐ State Clauses
- ☐ 5. **Operations / Management Related Clauses**
  - ☐ Federal and State
  - ☐ State Clauses

2a. Federal Rolling Stock Related Clauses

A. Cargo Preference

B. Bus Testing Certification

C. TVM Certifications

D. Pre-Award and Post-Delivery Audits

E. Federal Motor Vehicle Safety Standards (FMVSS)

☐ **Awards Exceeding $100,000**

F. Contract work Hours and Safety Standards Act (contracts only over 100K)

☒ **Awards Exceeding $150,000**

G. Buy America $150,000

A. Cargo Preference

The Recipient agrees to comply with the shipping requirements of 46 U.S.C. § 55305, and U.S. Maritime Administration regulations, "Cargo Preference – U.S.-Flag Vessels," 46 C.F.R. part 381.

B. Bus Testing Certification

The Contractor [Manufacturer] agrees to comply with 49 U.S.C. A 5323(c) and FTA's Implementing regulation at 49 CFR 665 and shall perform the following:

I. A manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient which will be prior to the recipient's final acceptance of the first vehicle.

II. A manufacturer who releases a report under paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public.

III. If the manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the manufacturer shall provide a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing.

IV. If the manufacturer represents that the vehicle is "grandfathered" (has been used in mass transit service in the United States before October 1, 1988, and is currently being produced without a major change in configuration or components), the manufacturer shall provide the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

Altoona Test Certification (Check one of the following):

☑ The vehicle has been Altoona tested, report number: _____

☑ The vehicle is exempt from testing IAW 49 CFR 665.

☐ The vehicle is currently being tested at Altoona.

Funds will not be released until the purchasing agency receives a copy of the Altoona test report, as appropriate, per 49 CFR 665.

C. TVM Certification

The vendor will provide products compliant with 49 CFR 26.49 by submitting a Disadvantaged Business Enterprises (DBE) Certification certifying the vehicle manufacturer complied with all DBE program requirements listed under 49 CFR 26.

Name of manufacturer of vehicle(s) to be delivered:

D. Pre-Award and Post-Delivery Audits

The Contractor agrees to comply with 49 U.S.C. § 5323(m) and FTA's implementing regulation at 49 C.F.R. part 663. The Contractor shall comply with the Buy America certification(s) submitted with its proposal/bid. The Contractor agrees to participate and cooperate in any pre-award and post-delivery audits performed pursuant to 49 C.F.R. part 663 and related FTA guidance.

E. Federal Motor Vehicle Safety Standards (FMVSS) Certification

Any vehicles provided by the vendor will comply with all applicable FMVSS certification. The vendor shall submit:

I. Manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS; or

II. Manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

FMVSS Certification	
Name of Company Creative Bus Sales, Inc.	Printed Name of Person Completing Form Nick Corley
Date March 11, 2022	Signature

Awards Exceeding $100,000

F. Contract work Hours

The Recipient agrees that all contracts awarded by the non-federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations (29 C.F.R. part 5). Under 40 U.S.C. § 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer based on a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Awards Exceeding $150,000

G. Buy America

Except as the Federal Government determines otherwise in writing, the Recipient agrees to comply with FTA's U.S. domestic preference requirements and follow federal guidance of 49 U.S.C. § 5323(j), and FTA regulations, "Buy America Requirements," 49 C.F.R. part 661, to the extent consistent with 49 U.S.C. § 5323(j);

Buy America (Check where Applicable):

☑ The vendor or offeror hereby certifies it will comply with the requirements of 49 USC 5323(j) and the applicable regulations in 49 CFR 661, providing Buy America compliant manufactured goods or rolling stock.

☐ The vendor or offeror cannot comply with the requirements 49 USC 5323(j), but may qualify for an exception to the requirement pursuant to the regulations in 49 CFR 661.

Buy America Certification	
Name of Company Creative Bus Sales, Inc.	Printed Name of Person Completing Form Nick Corley
Date March 11, 2022	Signature

Rolling Stock Certification

The undersigned vendor certifies to abide by these clauses and include the following clauses in each subcontract financed in whole or in part with Federal Transit Administration (FTA) funds. Vendors are certifying by reference the entire list FTA's current fiscal year Certifications and Assurances (for fiscal year 2021), and shall download at:

https://www.transit.dot.gov/funding/grantee-resources/certifications-and-assurances/certifications-assurances.

Name of Company Creative Bus Sales, Inc.	Printed Name of Person Completing Form Nick Corley
Date March 11, 2022	Signature

2b. State of Texas Required Clauses: Rolling Stock

A. Dispute Resolution

B. Sale or Lease of Motor Vehicles

A. §2260.004 Gov't Code Dispute Resolution

The Recipient agrees to the dispute resolution process provided for in Chapter 2260 of the Texas Government Code must be used to attempt to resolve any dispute under this Agreement.

B. Occupations Code, Chapter 2301 – Sale or Lease of Motor Vehicles §2301.252

I. A person may not engage in the business of buying, selling, or exchanging new motor vehicles unless the person:
   a. Holds a franchised dealer's license issued under this chapter for the make of new motor vehicle being bought, sold, or exchanged; or
   b. Is a bona fide employee of the holder of a franchised dealer's license.

II. For purposes of this section:
   a. The make of a conversion is that of the chassis manufacturer;
   b. The make of a motor home is that of the motor home manufacturer;
   c. The make of an ambulance is that of the ambulance manufacturer; and
   d. The make of a fire-fighting vehicle is that of the fire-fighting vehicle manufacturer.

Rolling Stock Certification

The undersigned vendor certifies to abide by these clauses and include the following clauses in each subcontract financed in whole or in part with State of Texas funds.

Name of Company	Printed Name of Person Completing Form
Creative Bus Sales, Inc.	Nick Corley
Date	**Signature**
March 11, 2022	

Attachment M

Fort Bend County Public Transportation

INTENT TO PERFORM AS A DBE CONTRACTOR OR DBE SUBCONTRACTOR/SUBVENDOR

A separate form should be completed for each DBE firm. (Offeror/Prime Contractor and/or Subcontractor/Subvendor)

Name of **Offeror/Prime Contractor**: Creative Bus Sales, Inc.

Name of Subcontractor/Subvendor: *(if applicable)* Not Applicable

Project Name: Purchase of Transit Vehicles

IFB/RFP/RFQ Number: RFP 22-034

1. The **DBE Offeror/Prime Contractor or DBE Subcontractor/Subvendor** *(whichever is applicable)* named above must be currently certified under the Texas Unified Certification Program (TUCP) as a DBE (or will be certified at the time this solicitation is due), and asserts that said qualification is met with the ethnic code: _____.

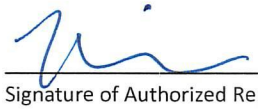
Ethnic Codes:			
A) Black American Male	B) Black American Female	C) Hispanic American Male	D) Hispanic American Female
E) Native American Male	F) Native American Female	G) Asian Pacific American Male	H) Asian Pacific American Female
I) SubContinent Asian American Male	J) SubContinent Asian American Female	K) Non Minority Female	

2. The **DBE Offeror/Prime Contractor or DBE Subcontractor/Subvendor** *(whichever is applicable)* named above is prepared to perform the following described work with their own workforce and/or supply the material listed in connection with the above project.

This work will be performed at the following price $ _____ (and/or _____ % of the total prime contract amount).

(If this form is being completed relative to a Subcontractor/Subvendor, note that this amount should be the same $/% amount that is completed on the Subcontractor/Subvendor Participation Form.)

Nick Corley — Printed Name of Offeror/Prime Contractor Authorized Representative

 — Signature of Authorized Representative

March 11, 2022 — Date Signed

Name of Firm that is DBE Certified (if different from Offeror/Prime Contractor): N/A (Subcontractor/Subvendor)

_____ Printed Name of Authorized Representative

_____ Signature of Authorized Representative

_____ Date Signed

Rev 1/4/2022

Attachment N

Fort Bend County Public Transportation
Subcontractor/Subvendor Participation

Instructions: The Offeror/Prime Contractor shall complete this form by listing: Names of **all** subcontractors/subvendors proposed on this project, Status as a DBE or Non-DBE, $ or % amount of Total Prime Contract, Description of work to be performed/product to be provided, and Contact information. The subcontractors/subvendors listed on this form as DBEs must be currently certified under the Texas Unified Certification Program (TUCP) as a DBE (or will be at the time this solicitation is due). Additionally, for each DBE subcontractor/subvendor listed on this form, the Offeror/Prime Contractor must complete the Intent to Perform as a DBE Contractor or DBE Subcontractor/Subvendor Form agreeing to the information.

Name of Offeror/Prime Contractor: Creative Bus Sales, Inc.

Project Name: Purchase of Transit Vehicles

IFB/RFP/RFQ Number: RFP 22-034

1	**Name of Subcontractor/Subvendor**	**Phone Number**	**$/% Amt of Total Prime Contract**	**Work to be performed/product to be provided**
	N/A			
	Contact Person's Name	**Email Address**	**DBE or Non-DBE**	**Address**
2	**Name of Subcontractor/Subvendor**	**Phone Number**	**$/% Amt of Total Prime Contract**	**Work to be performed/product to be provided**
	Contact Person's Name	**Email Address**	**DBE or Non-DBE**	**Address**
3	**Name of Subcontractor/Subvendor**	**Phone Number**	**$/% Amt of Total Prime Contract**	**Work to be performed/product to be provided**
	Contact Person's Name	**Email Address**	**DBE or Non-DBE**	**Address**
4	**Name of Subcontractor/Subvendor**	**Phone Number**	**$/% Amt of Total Prime Contract**	**Work to be performed/product to be provided**
	Contact Person's Name	**Email Address**	**DBE or Non-DBE**	**Address**

Upon execution of a contract with Fort Bend County Public Transportation, the undersigned will enter into a formal agreement with DBE subcontractors/subvendors for work listed in this schedule. The undersigned agrees to the terms of this schedule by signing below and submitting the Intent to Perform as a DBE Contractor form (as completed by the DBE subcontractors/subvendors). If you are a DBE Offeror/Prime Contractor, you also certify that no more than 70% of the work for this project will be subcontracted.

Nick Corley
Printed Name of Authorized Representative of Offeror/Prime Contractor

Signature

March 11, 2022
Date Signed

Rev 1/4/2022

Not every provision of every certification will apply to every applicant or award. If a provision of a certification does not apply to the applicant or its award, FTA will not enforce that provision. Refer to FTA's accompanying Instructions document for more information.

Text in italics is guidance to the public. It does not have the force and effect of law, and is not meant to bind the public in any way. It is intended only to provide clarity to the public regarding existing requirements under the law or agency policies.

CATEGORY 1. CERTIFICATIONS AND ASSURANCES REQUIRED OF EVERY APPLICANT.

All applicants must make the certifications in this category.

1.1. Standard Assurances.

The certifications in this subcategory appear as part of the applicant's registration or annual registration renewal in the System for Award Management (SAM.gov) and on the Office of Management and Budget's standard form 424B "Assurances—Non-Construction Programs". This certification has been modified in places to include analogous certifications required by U.S. DOT statutes or regulations.

As the duly authorized representative of the applicant, you certify that the applicant:

(a) Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.

(b) Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

(c) Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

(d) Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

(e) Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§ 4728–4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 CFR 900, Subpart F).

(f) Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to:

(1) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin, as effectuated by U.S. DOT regulation 49 CFR Part 21;

(2) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§ 1681–1683, and 1685–1686), which prohibits discrimination on the basis of sex, as effectuated by U.S. DOT regulation 49 CFR Part 25;

(3) Section 5332 of the Federal Transit Law (49 U.S.C. § 5332), which prohibits any person being excluded from participating in, denied a benefit of, or discriminated against under, a project, program, or activity receiving financial assistance from FTA because of race, color, religion, national origin, sex, disability, or age.

(4) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of handicaps, as effectuated by U.S. DOT regulation 49 CFR Part 27;

(5) The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101–6107), which prohibits discrimination on the basis of age;

(6) The Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse;

(7) The comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91–616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism;

(8) Sections 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§ 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records;

(9) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.), as amended, relating to nondiscrimination in the sale, rental, or financing of housing;

(10) Any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and,

(11) the requirements of any other nondiscrimination statute(s) which may apply to the application.

(g) Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 ("Uniform Act") (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases. The requirements of the Uniform Act are effectuated by U.S. DOT regulation 49 CFR Part 24.

(h) Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§ 1501–1508 and 7324–7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

(i) Will comply, as applicable, with the provisions of the Davis–Bacon Act (40 U.S.C. §§ 276a to 276a-7), the Copeland Act (40 U.S.C. § 276c and 18 U.S.C. § 874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 327–333), regarding labor standards for federally assisted construction subagreements.

(j) Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

(k) Will comply with environmental standards which may be prescribed pursuant to the following:

(1) Institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514;

(2) Notification of violating facilities pursuant to EO 11738;

(3) Protection of wetlands pursuant to EO 11990;

(4) Evaluation of flood hazards in floodplains in accordance with EO 11988;

(5) Assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451 et seq.);

(6) Conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§ 7401 et seq.);

(7) Protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and

(8) Protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93–205).

(l) Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§ 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

(m) Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. § 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§ 469a-1 et seq.).

(n) Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

(o) Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§ 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded

animals held for research, teaching, or other activities supported by this award of assistance.

(p) Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§ 4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

(q) Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and 2 CFR Part 200, Subpart F, "Audit Requirements", as adopted and implemented by U.S. DOT at 2 CFR Part 1201.

(r) Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing the program under which it is applying for assistance.

(s) Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. § 7104) which prohibits grant award recipients or a subrecipient from:

(1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect;

(2) Procuring a commercial sex act during the period of time that the award is in effect; or

(3) Using forced labor in the performance of the award or subawards under the award.

1.2. Standard Assurances: Additional Assurances for Construction Projects.

This certification appears on the Office of Management and Budget's standard form 424D "Assurances—Construction Programs" and applies specifically to federally assisted projects for construction. This certification has been modified in places to include analogous certifications required by U.S. DOT statutes or regulations.

As the duly authorized representative of the applicant, you certify that the applicant:

(a) Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency; will record the Federal awarding agency directives; and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure nondiscrimination during the useful life of the project.

(b) Will comply with the requirements of the assistance awarding agency with regard to the drafting, review, and approval of construction plans and specifications.

(c) Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work confirms with the approved plans and specifications, and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.

1.3. Procurement.

The Uniform Administrative Requirements, 2 CFR § 200.324, allow a recipient to self-certify that its procurement system complies with Federal requirements, in lieu of submitting to certain pre-procurement reviews.

The applicant certifies that its procurement system complies with:

(a) U.S. DOT regulations, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," 2 CFR Part 1201, which incorporates by reference U.S. OMB regulatory guidance, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," 2 CFR Part 200, particularly 2 CFR §§ 200.317–200.326 "Procurement Standards;
(b) Federal laws, regulations, and requirements applicable to FTA procurements; and
(c) The latest edition of FTA Circular 4220.1 and other applicable Federal guidance.

1.4. Suspension and Debarment.

Pursuant to Executive Order 12549, as implemented at 2 CFR Parts 180 and 1200, prior to entering into a covered transaction with an applicant, FTA must determine whether the applicant is excluded from participating in covered non-procurement transactions. For this purpose, FTA is authorized to collect a certification from each applicant regarding the applicant's exclusion status. 2 CFR § 180.300. Additionally, each applicant must disclose any information required by 2 CFR § 180.335 about the applicant and the applicant's principals prior to entering into an award agreement with FTA. This certification serves both purposes.

The applicant certifies, to the best of its knowledge and belief, that the applicant and each of its principals:

(a) Is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily or involuntarily excluded from covered transactions by any Federal department or agency;
(b) Has not, within the preceding three years, been convicted of or had a civil judgment rendered against him or her for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public or private agreement or transaction; violation of Federal or State antitrust statutes, including those proscribing price fixing between competitors, allocation of customers between competitors, and bid rigging; commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice; or commission of any other offense indicating a lack of business integrity or business honesty;

(c) Is not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any offense described in paragraph (b) of this certification;
(d) Has not, within the preceding three years, had one or more public transactions (Federal, State, or local) terminated for cause or default.

1.5. Coronavirus Response and Relief Supplemental Appropriations Act, 2021, and CARES Act Funding.

The applicant certifies:

(a) To the maximum extent possible, funds made available under title IV of division M of the Consolidated Appropriations Act, 2021 (Public Law 116–260), and in title XII of division B of the CARES Act (Public Law 116–136; 134 Stat. 599) shall be directed to payroll and operations of public transit (including payroll and expenses of private providers of public transportation); or
(a) The applicant certifies that the applicant has not furloughed any employees.

1.6. American Rescue Plan Act Funding.

The applicant certifies:

(a) Funds made available by Section 3401(a)(2)(A) of the American Rescue Plan Act of 2021 (Public Law 117-2) shall be directed to payroll and operations of public transportation (including payroll and expenses of private providers of public transportation); or
(b) The applicant certifies that the applicant has not furloughed any employees.

CATEGORY 2. PUBLIC TRANSPORTATION AGENCY SAFETY PLANS

This certification is required of each applicant under the Urbanized Area Formula Grants Program (49 U.S.C. § 5307), each rail operator that is subject to FTA's state safety oversight programs, and each State that is required to draft and certify a public transportation agency safety plan on behalf of a small public transportation provider pursuant to 49 CFR § 673.11(d). This certification is required by 49 U.S.C. § 5329(d)(1) and 49 CFR § 673.13.

This certification does not apply to any applicant that receives financial assistance from FTA exclusively under the Formula Grants for the Enhanced Mobility of Seniors Program (49 U.S.C. § 5310), the Formula Grants for Rural Areas Program (49 U.S.C. § 5311), or combination of these two programs.

If the applicant is an operator, the applicant certifies that it has established a public transportation agency safety plan meeting the requirements of 49 U.S.C. § 5329(d)(1) and 49 CFR Part 673.

If the applicant is a State, the applicant certifies that:

(a) It has drafted a public transportation agency safety plan for each small public transportation provider within the State, unless the small public transportation provider provided notification to the State that it was opting out of the State-drafted plan and drafting its own public transportation agency safety plan; and

(b) Each small public transportation provider within the State has a public transportation agency safety plan that has been approved by the provider's Accountable Executive (as that term is defined at 49 CFR § 673.5) and Board of Directors or Equivalent Authority (as that term is defined at 49 CFR § 673.5).

CATEGORY 3. TAX LIABILITY AND FELONY CONVICTIONS.

If the applicant is a business association (regardless of for-profit, not for-profit, or tax exempt status), it must make this certification. Federal appropriations acts since at least 2014 have prohibited FTA from using funds to enter into an agreement with any corporation that has unpaid Federal tax liabilities or recent felony convictions without first considering the corporation for debarment. E.g., Consolidated Appropriations Act, 2021, Pub. L. 116-260, div. E, title VII, §§ 744–745. U.S. DOT Order 4200.6 defines a "corporation" as "any private corporation, partnership, trust, joint-stock company, sole proprietorship, or other business association", and applies the restriction to all tiers of subawards. As prescribed by U.S. DOT Order 4200.6, FTA requires each business association applicant to certify as to its tax and felony status.

If the applicant is a private corporation, partnership, trust, joint-stock company, sole proprietorship, or other business association, the applicant certifies that:

(a) It has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

(b) It has not been convicted of a felony criminal violation under any Federal law within the preceding 24 months.

CATEGORY 4. LOBBYING.

If the applicant will apply for a grant or cooperative agreement exceeding $100,000, or a loan, line of credit, loan guarantee, or loan insurance exceeding $150,000, it must make the following certification and, if applicable, make a disclosure regarding the applicant's lobbying activities. This certification is required by 49 CFR § 20.110 and app. A to that part.

This certification does not apply to an applicant that is an Indian Tribe, Indian organization, or an Indian tribal organization exempt from the requirements of 49 CFR Part 20.

4.1. Certification for Contracts, Grants, Loans, and Cooperative Agreements.

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

(a) 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.

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

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

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

4.2. Statement for Loan Guarantees and Loan Insurance.

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

CATEGORY 5. PRIVATE SECTOR PROTECTIONS.

If the applicant will apply for funds that it will use to acquire or operate public transportation facilities or equipment, the applicant must make the following certification regarding protections for the private sector.

5.1. Charter Service Agreement.

To enforce the provisions of 49 U.S.C. § 5323(d), FTA's charter service regulation requires each applicant seeking assistance from FTA for the purpose of acquiring or operating any public transportation equipment or facilities to make the following Charter Service Agreement. 49 CFR § 604.4.

The applicant agrees that it, and each of its subrecipients, and third party contractors at any level who use FTA-funded vehicles, may provide charter service using equipment or facilities acquired with Federal assistance authorized under the Federal Transit Laws only in compliance with the regulations set out in 49 CFR Part 604, the terms and conditions of which are incorporated herein by reference.

5.2. School Bus Agreement.

To enforce the provisions of 49 U.S.C. § 5323(f), FTA's school bus regulation requires each applicant seeking assistance from FTA for the purpose of acquiring or operating any public transportation equipment or facilities to make the following agreement regarding the provision of school bus services. 49 CFR § 605.15.

(a) If the applicant is not authorized by the FTA Administrator under 49 CFR § 605.11 to engage in school bus operations, the applicant agrees and certifies as follows:
   (1) The applicant and any operator of project equipment agrees that it will not engage in school bus operations in competition with private school bus operators.
   (2) The applicant agrees that it will not engage in any practice which constitutes a means of avoiding the requirements of this agreement, part 605 of the Federal Mass Transit Regulations, or section 164(b) of the Federal-Aid Highway Act of 1973 (49 U.S.C. 1602a(b)).

(b) If the applicant is authorized or obtains authorization from the FTA Administrator to engage in school bus operations under 49 CFR § 605.11, the applicant agrees as follows:

(1) The applicant agrees that neither it nor any operator of project equipment will engage in school bus operations in competition with private school bus operators except as provided herein.

(2) The applicant, or any operator of project equipment, agrees to promptly notify the FTA Administrator of any changes in its operations which might jeopardize the continuation of an exemption under § 605.11.

(3) The applicant agrees that it will not engage in any practice which constitutes a means of avoiding the requirements of this agreement, part 605 of the Federal Transit Administration regulations or section 164(b) of the Federal-Aid Highway Act of 1973 (49 U.S.C. 1602a(b)).

(4) The applicant agrees that the project facilities and equipment shall be used for the provision of mass transportation services within its urban area and that any other use of project facilities and equipment will be incidental to and shall not interfere with the use of such facilities and equipment in mass transportation service to the public.

CATEGORY 6. TRANSIT ASSET MANAGEMENT PLAN.

If the applicant owns; operates, or manages capital assets used to provide public transportation, the following certification is required by 49 U.S.C. § 5326(a).

The applicant certifies that it is in compliance with 49 CFR Part 625.

CATEGORY 7. ROLLING STOCK BUY AMERICA REVIEWS AND BUS TESTING.

7.1. Rolling Stock Buy America Reviews.

If the applicant will apply for an award to acquire rolling stock for use in revenue service, it must make this certification. This certification is required by 49 CFR § 663.7.

The applicant certifies that it will conduct or cause to be conducted the pre-award and post-delivery audits prescribed by 49 CFR Part 663 and will maintain on file the certifications required by Subparts B, C, and D of 49 CFR Part 663.

7.2. Bus Testing.

If the applicant will apply for funds for the purchase or lease of any new bus model, or any bus model with a major change in configuration or components, the applicant must make this certification. This certification is required by 49 CFR § 665.7.

The applicant certifies that the bus was tested at the Bus Testing Facility and that the bus received a passing test score as required by 49 CFR Part 665. The applicant has received or will

receive the appropriate full Bus Testing Report and any applicable partial testing reports before final acceptance of the first vehicle.

CATEGORY 8. URBANIZED AREA FORMULA GRANTS PROGRAM.

If the applicant will apply for an award under the Urbanized Area Formula Grants Program (49 U.S.C. § 5307), or any other program or award that is subject to the requirements of 49 U.S.C. § 5307, including the Formula Grants for the Enhanced Mobility of Seniors Program (49 U.S.C. § 5310); "flex funds" from infrastructure programs administered by the Federal Highways Administration (see 49 U.S.C. § 5334(i)); projects that will receive an award authorized by the Transportation Infrastructure Finance and Innovation Act ("TIFIA") (23 U.S.C. §§ 601–609) or State Infrastructure Bank Program (23 U.S.C. § 610) (see 49 U.S.C. § 5323(o)); formula awards or competitive awards to urbanized areas under the Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339(a) and (b)); or low or no emission awards to any area under the Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339(c)), the applicant must make the following certification. This certification is required by 49 U.S.C. § 5307(c)(1).

The applicant certifies that it:

(a) Has or will have the legal, financial, and technical capacity to carry out the program of projects (developed pursuant 49 U.S.C. § 5307(b)), including safety and security aspects of the program;

(b) Has or will have satisfactory continuing control over the use of equipment and facilities;

(c) Will maintain equipment and facilities in accordance with the applicant's transit asset management plan;

(d) Will ensure that, during non-peak hours for transportation using or involving a facility or equipment of a project financed under this section, a fare that is not more than 50 percent of the peak hour fare will be charged for any—

  (1) Senior;

  (2) Individual who, because of illness, injury, age, congenital malfunction, or any other incapacity or temporary or permanent disability (including an individual who is a wheelchair user or has semi-ambulatory capability), cannot use a public transportation service or a public transportation facility effectively without special facilities, planning, or design; and

  (3) Individual presenting a Medicare card issued to that individual under title II or XVIII of the Social Security Act (42 U.S.C. §§ 401 et seq., and 1395 et seq.);

(e) In carrying out a procurement under 49 U.S.C. § 5307, will comply with 49 U.S.C. §§ 5323 (general provisions) and 5325 (contract requirements);

(f) Has complied with 49 U.S.C. § 5307(b) (program of projects requirements);

(g) Has available and will provide the required amounts as provided by 49 U.S.C. § 5307(d) (cost sharing);

(h) Will comply with 49 U.S.C. §§ 5303 (metropolitan transportation planning) and 5304 (statewide and nonmetropolitan transportation planning);

(i) Has a locally developed process to solicit and consider public comment before raising a fare or carrying out a major reduction of transportation;

(j) Either—

(1) Will expend for each fiscal year for public transportation security projects, including increased lighting in or adjacent to a public transportation system (including bus stops, subway stations, parking lots, and garages), increased camera surveillance of an area in or adjacent to that system, providing an emergency telephone line to contact law enforcement or security personnel in an area in or adjacent to that system, and any other project intended to increase the security and safety of an existing or planned public transportation system, at least 1 percent of the amount the recipient receives for each fiscal year under 49 U.S.C. § 5336; or

(2) Has decided that the expenditure for security projects is not necessary;

(k) In the case of an applicant for an urbanized area with a population of not fewer than 200,000 individuals, as determined by the Bureau of the Census, will submit an annual report listing projects carried out in the preceding fiscal year under 49 U.S.C. § 5307 for associated transit improvements as defined in 49 U.S.C. § 5302; and

(l) Will comply with 49 U.S.C. § 5329(d) (public transportation agency safety plan).

CATEGORY 9. FORMULA GRANTS FOR RURAL AREAS.

If the applicant will apply for funds made available to it under the Formula Grants for Rural Areas Program (49 U.S.C. § 5311), it must make this certification. Paragraph (a) of this certification helps FTA make the determinations required by 49 U.S.C. § 5310(b)(2)(C). Paragraph (b) of this certification is required by 49 U.S.C. § 5311(f)(2). Paragraph (c) of this certification, which applies to funds apportioned for the Appalachian Development Public Transportation Assistance Program, is necessary to enforce the conditions of 49 U.S.C. § 5311(c)(2)(D).

(a) The applicant certifies that its State program for public transportation service projects, including agreements with private providers for public transportation service—

(1) Provides a fair distribution of amounts in the State, including Indian reservations; and

(2) Provides the maximum feasible coordination of public transportation service assisted under 49 U.S.C. § 5311 with transportation service assisted by other Federal sources; and

(b) If the applicant will in any fiscal year expend less than 15% of the total amount made available to it under 49 U.S.C. § 5311 to carry out a program to develop and support intercity bus transportation, the applicant certifies that it has consulted with affected intercity bus service providers, and the intercity bus service needs of the State are being met adequately.

(c) If the applicant will use for a highway project amounts that cannot be used for operating expenses authorized under 49 U.S.C. § 5311(c)(2) (Appalachian Development Public Transportation Assistance Program), the applicant certifies that—

(1) It has approved the use in writing only after providing appropriate notice and an opportunity for comment and appeal to affected public transportation providers; and

(2) It has determined that otherwise eligible local transit needs are being addressed.

CATEGORY 10. FIXED GUIDEWAY CAPITAL INVESTMENT GRANTS AND THE EXPEDITED PROJECT DELIVERY FOR CAPITAL INVESTMENT GRANTS PILOT PROGRAM.

If the applicant will apply for an award under any subsection of the Fixed Guideway Capital Investment Program (49 U.S.C. § 5309), including an award made pursuant to the FAST Act's Expedited Project Delivery for Capital Investment Grants Pilot Program (Pub. L. 114-94, div. A, title III, § 3005(b)), the applicant must make the following certification. This certification is required by 49 U.S.C. § 5309(c)(2) and Pub. L. 114-94, div. A, title III, § 3005(b)(3)(B).

The applicant certifies that it:

(a) Has or will have the legal, financial, and technical capacity to carry out its Award, including the safety and security aspects of that Award,

(b) Has or will have satisfactory continuing control over the use of equipment and facilities acquired or improved under its Award.

(c) Will maintain equipment and facilities acquired or improved under its Award in accordance with its transit asset management plan; and

(d) Will comply with 49 U.S.C. §§ 5303 (metropolitan transportation planning) and 5304 (statewide and nonmetropolitan transportation planning).

CATEGORY 11. GRANTS FOR BUSES AND BUS FACILITIES AND LOW OR NO EMISSION VEHICLE DEPLOYMENT GRANT PROGRAMS.

If the applicant is in an urbanized area and will apply for an award under subsection (a) (formula grants), subsection (b) (buses and bus facilities competitive grants), or subsection (c) (low or no emissions grants) of the Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339), the applicant must make the certification in Category 8 for Urbanized Area Formula

Grants (49 U.S.C. § 5307). This certification is required by 49 U.S.C. § 5339(a)(3), (b)(6), and (c)(3), respectively.

If the applicant is in a rural area and will apply for an award under subsection (a) (formula grants), subsection (b) (bus and bus facilities competitive grants), or subsection (c) (low or no emissions grants) of the Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339), the applicant must make the certification in Category 9 for Formula Grants for Rural Areas (49 U.S.C. § 5311). This certification is required by 49 U.S.C. § 5339(a)(3), (b)(6), and (c)(3), respectively.

Making this certification will incorporate by reference the applicable certifications in Category 8 or Category 9.

If the applicant will receive a competitive award under subsection (b) (buses and bus facilities competitive grants), or subsection (c) (low or no emissions grants) of the Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339) related to zero emissions vehicles or related infrastructure, it must make the following certification. This certification is required by 49 U.S.C. § 5339(d).

The applicant will use 5 percent of grants related to zero emissions vehicles (as defined in subsection (c)(1)) or related infrastructure under subsection (b) or (c) to fund workforce development training as described in section 49 U.S.C. § 5314(b)(2) (including registered apprenticeships and other labor-management training programs) under the recipient's plan to address the impact of the transition to zero emission vehicles on the applicant's current workforce; or the applicant certifies a smaller percentage is necessary to carry out that plan.

CATEGORY 12. ENHANCED MOBILITY OF SENIORS AND INDIVIDUALS WITH DISABILITIES PROGRAMS.

If the applicant will apply for an award under the Formula Grants for the Enhanced Mobility of Seniors and Individuals with Disabilities Program (49 U.S.C. § 5310), it must make the certification in Category 8 for Urbanized Area Formula Grants (49 U.S.C. § 5307). This certification is required by 49 U.S.C. § 5310(e)(1). Making this certification will incorporate by reference the certification in Category 8, except that FTA has determined that (d), (f), (i), (j), and (k) of Category 8 do not apply to awards made under 49 U.S.C. § 5310 and will not be enforced.

In addition to the certification in Category 8, the applicant must make the following certification that is specific to the Formula Grants for the Enhanced Mobility of Seniors and Individuals with Disabilities Program. This certification is required by 49 U.S.C. § 5310(e)(2).

The applicant certifies that:

(a) The projects selected by the applicant are included in a locally developed, coordinated public transit-human services transportation plan;
(b) The plan described in clause (a) was developed and approved through a process that included participation by seniors, individuals with disabilities, representatives of public, private, and nonprofit transportation and human services providers, and other members of the public;
(c) To the maximum extent feasible, the services funded under 49 U.S.C. § 5310 will be coordinated with transportation services assisted by other Federal departments and agencies, including any transportation activities carried out by a recipient of a grant from the Department of Health and Human Services; and
(d) If the applicant will allocate funds received under 49 U.S.C. § 5310 to subrecipients, it will do so on a fair and equitable basis.

CATEGORY 13. STATE OF GOOD REPAIR GRANTS.

If the applicant will apply for an award under FTA's State of Good Repair Grants Program (49 U.S.C. § 5337), it must make the following certification. Because FTA generally does not review the transit asset management plans of public transportation providers, the asset management certification is necessary to enforce the provisions of 49 U.S.C. § 5337(a)(4). The certification with regard to acquiring restricted rail rolling stock is required by 49 U.S.C. § 5323(u)(4). Note that this certification is not limited to the use of Federal funds.

The applicant certifies that the projects it will carry out using assistance authorized by the State of Good Repair Grants Program, 49 U.S.C. § 5337, are aligned with the applicant's most recent transit asset management plan and are identified in the investment and prioritization section of such plan, consistent with the requirements of 49 CFR Part 625.

If the applicant operates a rail fixed guideway service, the applicant certifies that, in the fiscal year for which an award is available to the applicant under the State of Good Repair Grants Program, 49 U.S.C. § 5337, the applicant will not award any contract or subcontract for the procurement of rail rolling stock for use in public transportation with a rail rolling stock manufacturer described in 49 U.S.C. § 5323(u)(1).

CATEGORY 14. INFRASTRUCTURE FINANCE PROGRAMS.

If the applicant will apply for an award for a project that will include assistance under the Transportation Infrastructure Finance and Innovation Act ("TIFIA") Program (23 U.S.C. §§ 601–609) or the State Infrastructure Banks ("SIB") Program (23 U.S.C. § 610), it must make the certifications in Category 8 for the Urbanized Area Formula Grants Program, Category 10 for the Fixed Guideway Capital Investment Grants program, and Category 13 for the State of Good Repair Grants program. These certifications are required by 49 U.S.C. § 5323(o).

Making this certification will incorporate the certifications in Categories 8, 10, and 13 by reference.

CATEGORY 15. ALCOHOL AND CONTROLLED SUBSTANCES TESTING.

If the applicant will apply for an award under FTA's Urbanized Area Formula Grants Program (49 U.S.C. § 5307), Fixed Guideway Capital Investment Program (49 U.S.C. § 5309), Formula Grants for Rural Areas Program (49 U.S.C. § 5311), or Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339) programs, the applicant must make the following certification. The applicant must make this certification on its own behalf and on behalf of its subrecipients and contractors. This certification is required by 49 CFR § 655.83.

The applicant certifies that it, its subrecipients, and its contractors are compliant with FTA's regulation for the Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations, 49 CFR Part 655.

CATEGORY 16. RAIL SAFETY TRAINING AND OVERSIGHT.

If the applicant is a State with at least one rail fixed guideway system, or is a State Safety Oversight Agency, or operates a rail fixed guideway system, it must make the following certification. The elements of this certification are required by 49 CFR §§ 672.31 and 674.39.

The applicant certifies that the rail fixed guideway public transportation system and the State Safety Oversight Agency for the State are:

(a) Compliant with the requirements of 49 CFR Part 672, "Public Transportation Safety Certification Training Program"; and
(b) Compliant with the requirements of 49 CFR Part 674, "Sate Safety Oversight".

CATEGORY 17. DEMAND RESPONSIVE SERVICE.

If the applicant operates demand responsive service and will apply for an award to purchase a non-rail vehicle that is not accessible within the meaning of 49 CFR Part 37, it must make the following certification. This certification is required by 49 CFR § 37.77.

The applicant certifies that the service it provides to individuals with disabilities is equivalent to that provided to other persons. A demand responsive system, when viewed in its entirety, is deemed to provide equivalent service if the service available to individuals with disabilities, including individuals who use wheelchairs, is provided in the most integrated setting appropriate to the needs of the individual and is equivalent to the service provided other individuals with respect to the following service characteristics:

(a) Response time;

(b) Fares;
(c) Geographic area of service;
(d) Hours and days of service;
(e) Restrictions or priorities based on trip purpose;
(f) Availability of information and reservation capability; and
(g) Any constraints on capacity or service availability.

CATEGORY 18. INTEREST AND FINANCING COSTS.

*If the applicant will pay for interest or other financing costs of a project using assistance awarded under the Urbanized Area Formula Grants Program (49 U.S.C. § 5307), the Fixed Guideway Capital Investment Grants Program (49 U.S.C. § 5309), or any program that must comply with the requirements of 49 U.S.C. § 5307, including the Formula Grants for the Enhanced Mobility of Seniors Program (49 U.S.C. § 5310), "flex funds" from infrastructure programs administered by the Federal Highways Administration (*see *49 U.S.C. § 5334(i)), or awards to urbanized areas under the Grants for Buses and Bus Facilities Program (49 U.S.C. § 5339), the applicant must make the following certification. This certification is required by 49 U.S.C. §§ 5307(e)(3) and 5309(k)(2)(D).*

The applicant certifies that:

(a) Its application includes the cost of interest earned and payable on bonds issued by the applicant only to the extent proceeds of the bonds were or will be expended in carrying out the project identified in its application; and
(b) The applicant has shown or will show reasonable diligence in seeking the most favorable financing terms available to the project at the time of borrowing.

CATEGORY 19. CYBERSECURITY CERTIFICATION FOR RAIL ROLLING STOCK AND OPERATIONS.

If the applicant operates a rail fixed guideway public transportation system, it must make this certification. This certification is required by 49 U.S.C. § 5323(v), a new subsection added by the National Defense Authorization Act for Fiscal Year 2020, Pub. L. 116-92, § 7613 (Dec. 20, 2019). For information about standards or practices that may apply to a rail fixed guideway public transportation system, visit https://www.nist.gov/cyberframework *and* https://www.cisa.gov/.

The applicant certifies that it has established a process to develop, maintain, and execute a written plan for identifying and reducing cybersecurity risks that complies with the requirements of 49 U.S.C. § 5323(v)(2).

CATEGORY 20. PUBLIC TRANSPORTATION ON INDIAN RESERVATIONS FORMULA AND DISCRETIONARY PROGRAM (TRIBAL TRANSIT PROGRAMS).

Before FTA may provide Federal assistance for an Award financed under either the Public Transportation on Indian Reservations Formula or Discretionary Program authorized under 49 U.S.C. § 5311(c)(1), as amended by the FAST Act, (Tribal Transit Programs), the applicant must select the Certifications in Category 21, except as FTA determines otherwise in writing. Tribal Transit Program applicants may certify to this Category and Category 1 (Certifications and Assurances Required of Every Applicant) and need not make any other certification, to meet Tribal Transit Program certification requirements. If an applicant will apply for any program in addition to the Tribal Transit Program, additional certifications may be required.

FTA has established terms and conditions for Tribal Transit Program grants financed with Federal assistance appropriated or made available under 49 U.S.C. § 5311(c)(1). The applicant certifies that:

(a) It has or will have the legal, financial, and technical capacity to carry out its Award, including the safety and security aspects of that Award.

(b) It has or will have satisfactory continuing control over the use of its equipment and facilities acquired or improved under its Award.

(c) It will maintain its equipment and facilities acquired or improved under its Award, in accordance with its transit asset management plan and consistent with FTA regulations, "Transit Asset Management," 49 CFR Part 625. Its Award will achieve maximum feasible coordination with transportation service financed by other federal sources.

(d) With respect to its procurement system:

  (1) It will have a procurement system that complies with U.S. DOT regulations, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," 2 CFR Part 1201, which incorporates by reference U.S. OMB regulatory guidance, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," 2 CFR Part 200, for Awards made on or after December 26, 2014,

  (2) It will have a procurement system that complies with U.S. DOT regulations, "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments," 49 CFR Part 18, specifically former 49 CFR § 18.36, for Awards made before December 26, 2014, or

  (3) It will inform FTA promptly if its procurement system does not comply with either of those U.S. DOT regulations.

(e) It will comply with the Certifications, Assurances, and Agreements in:

  (1) Category 05.1 and 05.2 (Charter Service Agreement and School Bus Agreement),

  (2) Category 06 (Transit Asset Management Plan),

(3) Category 07.1 and 07.2 (Rolling Stock Buy America Reviews and Bus Testing),
(4) Category 09 (Formula Grants for Rural Areas),
(5) Category 15 (Alcohol and Controlled Substances Testing), and
(6) Category 17 (Demand Responsive Service).

CATEGORY 21. EMERGENCY RELIEF PROGRAM.

An applicant to the Public Transportation Emergency Relief Program, 49 U.S.C. § 5324, must make the following certification. The certification is required by 49 U.S.C. § 5324(f) and must be made before the applicant can receive a grant under the Emergency Relief program.

The applicant certifies that the applicant has insurance required under State law for all structures related to the emergency relief program grant application.

FEDERAL FISCAL YEAR 2022 CERTIFICATIONS AND ASSURANCES FOR FTA ASSISTANCE PROGRAMS

(Signature pages alternate to providing Certifications and Assurances in TrAMS.)

Name of Applicant: Creative Bus Sales, Inc.

The Applicant certifies to the applicable provisions of all categories: (*check here*) ✓.

Or,

The Applicant certifies to the applicable provisions of the categories it has selected:

Category		Certification
01	Certifications and Assurances Required of Every Applicant	
02	Public Transportation Agency Safety Plans	
03	Tax Liability and Felony Convictions	
04	Lobbying	
05	Private Sector Protections	
06	Transit Asset Management Plan	
07	Rolling Stock Buy America Reviews and Bus Testing	
08	Urbanized Area Formula Grants Program	
09	Formula Grants for Rural Areas	
10	Fixed Guideway Capital Investment Grants and the Expedited Project Delivery for Capital Investment Grants Pilot Program	
11	Grants for Buses and Bus Facilities and Low or No Emission Vehicle Deployment Grant Programs	

12	Enhanced Mobility of Seniors and Individuals with Disabilities Programs	
13	State of Good Repair Grants	
14	Infrastructure Finance Programs	
15	Alcohol and Controlled Substances Testing	
16	Rail Safety Training and Oversight	
17	Demand Responsive Service	
18	Interest and Financing Costs	
19	Cybersecurity Certification for Rail Rolling Stock and Operations	
20	Tribal Transit Programs	
21	Emergency Relief Program	

CERTIFICATIONS AND ASSURANCES SIGNATURE PAGE

AFFIRMATION OF APPLICANT

Name of the Applicant: Creative Bus Sales, Inc.

BY SIGNING BELOW, on behalf of the Applicant, I declare that it has duly authorized me to make these Certifications and Assurances and bind its compliance. Thus, it agrees to comply with all federal laws, regulations, and requirements, follow applicable federal guidance, and comply with the Certifications and Assurances as indicated on the foregoing page applicable to each application its Authorized Representative makes to the Federal Transit Administration (FTA) in the federal fiscal year, irrespective of whether the individual that acted on his or her Applicant's behalf continues to represent it.

The Certifications and Assurances the Applicant selects apply to each Award for which it now seeks, or may later seek federal assistance to be awarded by FTA during the federal fiscal year.

The Applicant affirms the truthfulness and accuracy of the Certifications and Assurances it has selected in the statements submitted with this document and any other submission made to FTA, and acknowledges that the Program Fraud Civil Remedies Act of 1986, 31 U.S.C. § 3801 *et seq.*, and implementing U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR part 31, apply to any certification, assurance or submission made to FTA. The criminal provisions of 18 U.S.C. § 1001 apply to any certification, assurance, or submission made in connection with a federal public transportation program authorized by 49 U.S.C. chapter 53 or any other statute

In signing this document, I declare under penalties of perjury that the foregoing Certifications and Assurances, and any other statements made by me on behalf of the Applicant are true and accurate.

Signature _____ Date: March 11, 2022

Name Nick Corley Authorized Representative of Applicant

AFFIRMATION OF APPLICANT'S ATTORNEY

For (Name of Applicant): Creative Bus Sales, Inc.

As the undersigned Attorney for the above-named Applicant, I hereby affirm to the Applicant that it has authority under state, local, or tribal government law, as applicable, to make and comply with the Certifications and Assurances as indicated on the foregoing pages. I further affirm that, in my opinion, the Certifications and Assurances have been legally made and constitute legal and binding obligations on it.

I further affirm that, to the best of my knowledge, there is no legislation or litigation pending or imminent that might adversely affect the validity of these Certifications and Assurances, or of the performance of its FTA assisted Award.

Signature Michelle Walker #35400-49 Date: 3/9/2022

Name Michelle Walker Attorney for Applicant

Each Applicant for federal assistance to be awarded by FTA must provide an Affirmation of Applicant's Attorney pertaining to the Applicant's legal capacity. The Applicant may enter its electronic signature in lieu of the Attorney's signature within TrAMS, provided the Applicant has on file and uploaded to TrAMS this hard-copy Affirmation, signed by the attorney and dated this federal fiscal year.

	QUALITY PLAN - PROGRAM COMMON	MAXIMUM POINTS		QVM COMMON
D0100	Management Commitment	10	*	10.0
D0200	Employee Involvement	2		2.0
D0300	Engineering	12	*	11.0
D0400	Process Control	2	*	1.5
D0500	Quality Control	13	*	12.0
D0600	Completed Vehicle Sign-off	8	*	7.5
D0700	Customer Support	10		10.0
D0800	Manufacturing Environment	4		3.5
	Meets Quality Plan Minimum Requirements (Yes/No)			Yes
	Quality Plan Subtotal	61		57.5

	GENERAL CHASSIS - PROGRAM COMMON			
E0100	Heat Management	0	*	0.0
E0200	Climate Control - Heat & Air Cond.	12	*	12.0
E0300	Wheels and Tires	2	*	2.0
E0400	Steering and Suspension	1	*	1.0
E0500	Brakes	0	*	0.0
E0600	Powertrain - Engine/Transmission/Axles	2	*	2.0
E0700	Fuel System	0	*	0.0
E0800	Exhaust System	6	*	6.0
E0900	Frame	2	*	2.0
E1000	Body and Seating	2	*	2.0
E1100	Electrical Systems	11	*	10.5
E1200	Material/General	4		4.0
E1300	Aftermarket Suspension Systems	6		6.0
E1400	Brake Retarders	0		0.0
E1500	Wheelbase Changes and Rear Frame Extensions	6		5.5
E1600	Front Mounted Accessories	2		2.0
	Meets General Chassis Minimum Requirements (Yes/No)			Yes
	General Chassis Subtotal	42		41.5
	Meets All Common Minimum Requirements (Yes/No)			Yes
	Common QVM Program Subtotal	97		99.0

	UNIQUE INDUSTRY MODIFICATIONS			QVM UNIQUE
M	Mobility Unique Section	21	*	16.5
	Meets Unique Minimum Requirements (Yes/No)			Yes

*** = One or more minimum requirements in this section**

TOTAL COMMON AND UNIQUE			
Meets All Common & Unique Minimum Requirements (Yes/No)			Yes
Total Score (Maximum Possible):		118	115.5
Minimum Qualifying Score Required: (85% of Maximum Possible)		100.3	97.9%

This QVM assessment does not imply Ford approval of a participant's design, engineering, or altered or completed vehicles.

COMPANY Forest River Overflow Plant 5A ASSESSMENT DATE June 15, 2022

DIVISION Starcraft Bus, Glaval Bus, Startran, Champion, ElDorado and Elkhart Bus Overflow

LOCATION 2412 Century Dr. Goshen, IN 46528

PRODUCTS Bus

CHASSIS USED Transit, E350/450, F-Series including F550, F-650, F-750; see attached matrix.

CONTACT NAME Larry Hall TELEPHONE (574) 642-3121 x5225 FAX

SIGNATURE  E-MAIL lhall@forestriverinc.com

QVM REMARKS AND OVERALL ASSESSMENT

All buses are identical in construction except the front cap and badge/emblem, see attached matrix.
CMVSS and Transport Canada approved.
All units "rain tested".
All QVM "paper work" very well organized.
No vehicles produced under 10K lbs.
Chassis are "stretched by Mor/Ryde and the "R-L" suspension kit added.
FMVSS Testing performed by a third party and the results are positive and on file.
Separate sections explaining warranty of all units produced.
Multiple suppliers of a/c systems used. Installed by the plant, final assembly and initial operation by the supplier.
Seat belt retractors are removed and reinstalled after vehicle is complete.
Shop is slightly cluttered with hardware, hoses, electrical lines and parts.
Plant 5C is now used as a ware house and for lamination. No build of vehicles takes place.

Need to add the following to the owners manual or to the Ford QVM document file:

1. Responsibility for the modified vehicle (durability, performance, warranty, compliance with federal emission & safety standards) rests with the final stage manufacturer, altered, or adaptive modifier.
2. Add a paragraph to the Owner's Manual describing what changes are performed on the vehicle. This is to include, but not limited to "stretching the frame", extending the brake lines, adding shelving, additional seats, electrical devices, additional lighting, etc.

Other:
- Ensure all demated connectors are protected during build or until remated.

Note: Not all 1 point criteria are included on this assessment form. Modifiers are reminded to read the full set of guidelines

OVERALL ASSESSMENT

FM

FINAL RATING (FM, P, NQ)

CODE	REQUIREMENTS
FM	Fully Meets all the program minimum requirements including minimum qualifying score.
P	Pending - Program status is pending completion of documentation.
NQ	Not Qualified - Considered to have major deficiencies in meeting the program requirements. Not considered an active program participant.

LEAD

INSPECTION ENGINEER Doug Haas Date: 06/15/2022

Doug Haas

Responsibility for the modified vehicle (durability, performance, warranty, or compliance with federal emission and safety standards) rests with the final stage manufacturer, altered, or adaptive modifier.

Chart 2022-F

ATTACHMENT TO FORD QVM ASSESSMENT DATED 06/15/2022

FOREST RIVER BUS

Commercial Bus Comparison 2021

Starcraft Bus

Model	Chassis	Prefix	Suffix
Starlite	Ford E-350 Ford E-450 Ford Transit	STL	B
	FreightLiner Sprinter		BF
	Mercedes Sprinter		BM
StarQuest	Ford E-350 Ford E-450	SCL	L
Allstar	Ford E-350 Ford E-450 GM 3500 GM 4500	SFL	B
Allstar MVP	Ford E-450	SML	M
Allstar XL	Ford F-450 Ford F-550 Ford F-650 Ford F-750 International Freightliner	SXL	N
XLT	Ford F-650 Ford F-750	XLL	X
XLT	International	XLL	Z
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Notes: Starcraft Bus build mild steel, side wall bows, and primed painted. Free hung side wall aluminum sheet. Starcraft Bus front, rear caps, and wheel flares.

ElDorado Bus

Model	Chassis	Prefix	Suffix
Advance	Ford E-350 Ford E-450 Ford Transit	E5L	AC
N/A	N/A	N/A	N/A
Advantage	Ford E-350 Ford E-450 GM 3500 GM 4500	E4L E2L	AV AT
Advantage MVP	Ford E-450	E4L	AM
Advantage XL	Ford F-450 Ford F-550	E4L	AN
	Ford F-650 Ford F-750	E4L	AX
	International	E4L	AZ
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Notes: ElDorado Bus build mild steel, side wall bows, and primed painted. Free hung side wall aluminum sheet. Glaval Bus front, rear caps, and wheel flares.

StarTrans Bus

Model	Chassis	Prefix	Suffix
Candidate II	Ford E-350 Ford E-450 Ford Transit	CBL	CT
N/A	N/A	N/A	N/A
Senator II	Ford E-350 Ford E-450 GM 3500 GM 4500	SAL	ST
Senator II MVP	Ford E-450	CGL	SM
Senator II HD	Ford F-450 Ford F-550 Ford F-650 Ford F-750 International	CEL	SH
President / PS2	Freightliner	PSL	PT
MFSAB	Ford E-350 Ford E-450	VCL	MT

Notes: StarTrans Bus build Aluminized steel, 1 x 2 tube side wall stud. Laminated side wall aluminum sheet. StarTrans Bus front, rear caps, and Starcraft Bus wheel flares.

Elkhart Coach

Model	Chassis	Prefix	Suffix
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
ECE3 ECE4	Ford E-350 Ford E-450 GM 3500 GM 4500	ECL	EC
ECG3 ECG4		ECL	EB
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Notes: Elkhart Coach build Aluminized steel, 1 x 2 tube side wall stud. Laminated side wall aluminum sheet. StarTrans Bus front, rear caps, and Starcraft Bus wheel flares.

Glaval Bus

Model	Chassis	Prefix	Suffix
Primetime	Ford E-350	GPJ	P
	FreightLiner Sprinter		PP
	Mercedes Sprinter		PM
Commute	Ford Transit	GTJ	C
N/A	N/A	N/A	N/A
Universal	Ford E-350 Ford E-450	GUJ	U
Titan II	GM 3500 GM 4500	GNJ	T
Universal MVP	Ford E-450	GUJ	UM
Entourage	Ford F-450 Ford F-550	GEJ	E
Concorde	Ford F-650 Ford F-750	GCJ	D
Legacy	Freightliner	GYJ	G
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Notes: Glaval Bus build Aluminized steel, 1 x 2 tube side wall stud. Laminated side wall aluminum sheet. Glaval Bus front, rear caps, and wheel flares. Cove molding at floor to sidewall.

Champion Bus

Model	Chassis	Prefix	Suffix
Crusader	Ford E-350 Ford E-450 Ford Transit	C2J	HP
N/A	N/A	N/A	N/A
Challenger	Ford E-350 Ford E-450	C3J	HU
	GM 3500 GM 4500	C3J	HT
Challenger MVP	Ford E-450	N/A	N/A
Defender	Ford F-450 Ford F-550	C5J	HE
	Ford F-650 Ford F-750	C5J	HD
	Freightliner	C5J	HG
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Notes: Champion Bus build Aluminized steel, 1 x 2 tube side wall stud. Laminated side wall aluminum sheet. Glaval Bus front, rear caps, and wheel flares. Cove molding at floor to sidewall.

FOREST RIVER BUS

2367 CENTURY DRIVE · GOSHEN, INDIANA 46528 · 1.800.348.7440

Forest River Bus DBE Program
TVM Bidders List Update

Moving forward the FTA Office of Civil Rights asks that any entity seeking the goal submission status for the new fiscal year to visit the eligible transit vehicle manufacturer (TVM) website:

https://www.transit.dot.gov/regulations-and-guidance/civil-rights-ada/eligible-transit-vehicle-manufacturers

If you have any questions or concerns on Forest River Bus goal percentages or the DBE program, please contact our office of compliance at:

Donall Hasty
Director of Compliance and Customer Service
DBE Liaison Officer
O: (800) 348-7440 ext. 52168
dhasty@forestriverinc.com

Forest River Bus DBE Program Family

STARCRAFT BUS · Elkhart Coach · CHAMPION · ELDORADO A DIVISION OF FOREST RIVER, INC.

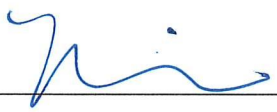
LONE STAR VAN · FRV FOREST RIVER VAN · STARTRANS BUS a division of Forest River, Inc. · Glaval Bus A Division Of Forest River, Inc.

COUNTY PURCHASING AGENT
Fort Bend County, Texas

Vendor Information

Jaime Kovar
Purchasing Agent

Office (281) 341-8640

Legal Company Name (top line of W9)	Creative Bus Sales, Inc.		
Business Name (if different from legal name)			
Federal ID # or S.S. #	33-0388707	DUNS # 03-874-3944	
Type of Business	x Corporation/LLC ___ Partnership ___ Sole Proprietor/Individual ___ Tax Exempt Organization		Age in Business?
Publicly Traded Business	x No ___ Yes Ticker Symbol _____		
Remittance Address	14740 Ramona Avenue		
City/State/Zip	Chino, California, 91710		
Physical Address	4955 West Northgate Drive		
City/State/Zip	Irving, Texas, 75062		
Phone/Fax Number	Phone: 463-333-8909 Fax: _____		
Contact Person	Jeff Johnson		
E-mail	jjohnson@creativebussales.com		
Check all that apply to the company listed above and provide certification number.	DBE-Disadvantaged Business Enterprise ☐ SBE-Small Business Enterprise ☐ HUB-Texas Historically Underutilized Business ☐ WBE-Women's Business Enterprise ☐	**Certification #** _____ **Certification #** _____ **Certification #** _____ **Certification #** _____	Cert Date / Exp Date
Company's gross annual receipts	<$500,000 _____	$500,000-$4,999,999 _____	
	$5,000,000-$16,999,999 ___	$17,000,000-$22,399,999 _____	
	>$22,400,000 x		
NAICs codes (Please enter all that apply)	485113		
Signature of Authorized Representative			
Printed Name	Nick Corley		
Title	Sales Operations Manager		
Date	March 11, 2022		

THIS FORM MUST BE SUBMITTED WITH THE SOLICITATION RESPONSE

Job No.: _____

TAX FORM/DEBT/ RESIDENCE CERTIFICATION
(for Advertised Projects)

Taxpayer Identification Number (T.I.N.): 33-0388707

Company Name submitting Bid/Proposal: Creative Bus Sales, Inc.

Mailing Address: 4955 West Northgate Drive, Irving, Texas, 75062

Are you registered to do business in the State of Texas? ✓ Yes No

If you are an individual, list the names and addresses of any partnership of which you are a general partner or any assumed name(s) under which you operate your business

_____

_____

I. **Property:** List all taxable property in Fort Bend County owned by you or above partnerships as well as any d/b/a names. Include real and personal property as well as mineral interest accounts. (Use a second sheet of paper if necessary.)

Fort Bend County Tax Acct. No.*	Property address or location**

** This is the property account identification number assigned by the Fort Bend County Appraisal District.*

*** For real property, specify the property address or legal description. For business personal property, specify the address where the property is located. For example, office equipment will normally be at your office, but inventory may be stored at a warehouse or other location.*

II. **Fort Bend County Debt** - Do you owe any debts to Fort Bend County (taxes on properties listed in I above, tickets, fines, tolls, court judgments, etc.)?

Yes ✓ No If yes, attach a separate page explaining the debt.

III. **Residence Certification** - Pursuant to Texas Government Code §2252.001 *et seq.*, as amended, Fort Bend County requests Residence Certification. §2252.001 *et seq.* of the Government Code provides some restrictions on the awarding of governmental contracts; pertinent provisions of §2252.001 are stated below:

(3) "Nonresident bidder" refers to a person who is not a resident.

(4) "Resident bidder" refers to a person whose principal place of business is in this state, including a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

I certify that Creative Bus Sales, Inc. is a Resident Bidder of Texas as defined in Government Code
[Company Name]
§2252.001.

I certify that _____ is a Nonresident Bidder as defined in Government Code
[Company Name]
§2252.001 and our principal place of business is _____.
[City and State]

An official website of the United States government
Here's how you know

You have 2 new alerts
Show / Hide Alerts

Download Unfollow

- Entity Registration
  - Core Data
    - Business Information
    - Entity Types
    - Financial Information
    - Taxpayer Information
    - Points of Contact
    - Security Information
  - Assertions
  - Reps and Certs
- Exclusions
- Responsibility / Qualification

CREATIVE BUS SALES, INC.

DUNS Unique Entity ID
038743944

SAM Unique Entity ID
GFE1VN1UH2W4

CAGE/NCAGE
3BKE3

Registration Status	*Expiration Date*
Active	Jan 20, 2023

Purpose of Registration
All Awards

Physical Address
14740 Ramona AVE
Chino, California
91710-5747, United States

Mailing Address
14740 Ramona Avenue
Chino, California
91710-5747, United States

*The DUNS number is currently the official Unique Entity ID

Version

Current Record

BUSINESS INFORMATION

Doing Business As
GETAWAY BUS

URL
www.creativebussales.com

State / Country of Incorporation
California, United States

MPIN
*****ive1**

Division Name
Creative Bus Sales, Inc.

Division Number
(blank)

Congressional District
California 35

Registration Dates

Activation Date
Jan 24, 2022

Submission Date
Jan 20, 2022

Initial Registration Date
Sep 16, 2002

Entity Dates

Entity Start Date
Jan 1, 1990

Fiscal Year End Close Date
Dec 31

Immediate Owner

CAGE
(blank)

Legal Business Name
(blank)

Highest Level Owner

CAGE
(blank)

Legal Business Name
(blank)

Executive Compensation

In your business or organization's preceding completed fiscal year, did your business or organization (the legal entity to which this specific SAM record, represented by a DUNS number, belongs) receive both of the following: 1. 80 percent or more of your annual gross revenues in U.S. federal contracts, subcontracts, loans, grants, subgrants, and/or cooperative agreements and 2. $25,000,000 or more in annual gross revenues from U.S. federal contracts, subcontracts, loans, grants, subgrants, and/or cooperative agreements?

No

Does the public have access to information about the compensation of the senior executives in your business or organization (the legal entity to which this specific SAM record, represented by a DUNS number, belongs)

through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986?

Not Selected

Proceedings Questions

Is your business or organization, as represented by the DUNS number on this entity registration, responding to a Federal procurement opportunity that contains the provision at FAR 52.209-7, subject to the clause in FAR 52.209-9 in a current Federal contract, or applying for a Federal grant opportunity which contains the award term and condition described in 2 C.F.R. 200 Appendix XII?

No

Does your business or organization, as represented by the DUNS number on this specific SAM record, have current active Federal contracts and/or grants with total value (including any exercised/unexercised options) greater than $10,000,000?

Not Selected

Within the last five years, had the business or organization (represented by the DUNS number on this specific SAM record) and/or any of its principals, in connection with the award to or performance by the business or organization of a Federal contract or grant, been the subject of a Federal or State (1) criminal proceeding resulting in a conviction or other acknowledgment of fault; (2) civil proceeding resulting in a finding of fault with a monetary fine, penalty, reimbursement, restitution, and/or damages greater than $5,000, or other acknowledgment of fault; and/or (3) administrative proceeding resulting in a finding of fault with either a monetary fine or penalty greater than $5,000 or reimbursement, restitution, or damages greater than $100,000, or other acknowledgment of fault?

Not Selected

SAM Search Authorization

I authorize my entity's non-sensitive information to be displayed in SAM public search results:

Yes

ENTITY TYPES

Business Types

Entity Structure
Corporate Entity (Not Tax Exempt)

Organization Factors

Subchapter S Corporation

Entity Type
Business or Organization

Profit Structure
For Profit Organization

Socio-Economic Types

Check the registrant's Reps & Certs, if present, under FAR 52.212-3 or FAR 52.219-1 to determine if the entity is an SBA-certified HUBZone small business concern. Additional small business information may be found in the SBA's Dynamic Small Business Search if the entity completed the SBA supplemental pages during registration.

FINANCIAL INFORMATION

Accepts Credit Card Payments
No

Debt Subject To Offset (What is this?)
No

Account Details

EFT Indicator
0000

CAGE Code
3BKE3

TAXPAYER INFORMATION

EIN
*******8707**

Taxpayer Name
CREATIVE BUS SALES INC

Name/Title of Individual Executing Consent
Cfo

Address
14740 Ramona AVE
Chino, California 91710-5747
United States

Type of Tax
Applicable Federal Tax

Tax Year (Most Recent Tax Year)
2016

TIN Consent Date
Jan 20, 2022

POINTS OF CONTACT

Accounts Receivable POC

LEANN BANWART, Ms.
lbanwart@creativebussales.com
909 465-5528 Ext: 273

Electronic Business

LEANN BANWART, Ms.
lbanwart@creativebussales.com
909 465-5528 Ext: 273
909 465-5529 (Fax)

14740 Ramona Avenue
Chino, California 91710-5747
United States

MAURICIO PALACIOS, MR.
mauricop@creativebussales.com
909 465-5528
909 465-5529 (Fax)

14740 Ramona AVE.
Chino, California 91710-5232
United States

Government Business

STEWART PICKETT, MR.
stewartp@creativebussales.com
909 465-5528
909 465-5529 (Fax)

14740 Ramona Avenue
Chino, California 91710-5747
United States

Nick Corley, MR.
ncorley@creativebussales.com
678 428-3356

909 465-5529 (Fax)

14740 Ramona AVE.
Chino, California 91710
United States

Past Performance

STEWART PICKETT, MR.
STEWARTP@CREATIVEBUSSALES.COM
909 465-5528
909 465-5529 (Fax)

14740 Ramona AVE
Chino, California 91710
United States

STEWART PICKETT, MR.
STEWARTP@CREATIVEBUSSALES.COM
909 465-5528
909 465-5529 (Fax)

14740 Ramona AVE.
Chino, California 91710
United States

Feedback

General Services Administration

This is a U.S. General Services Administration Federal Government computer system that is **"FOR OFFICIAL USE ONLY."** This system is subject to monitoring. Individuals found performing unauthorized activities are subject to disciplinary action including criminal prosecution.

FRANCHISED MOTOR VEHICLE DEALER

LICENSE NO: C138028

GENERAL DISTINGUISHING NUMBER:

Texas Department of Motor Vehicles

MOTOR VEHICLE DIVISION

P118245

Motor Vehicle

Creative Bus Sales, Inc.
4955 W NORTHGATE DR.
IRVING, TEXAS MONTGOMERY 75062

EXPIRES: 06-30-2022
PHYSICAL LOCATION:
4955 WEST NORTHGATE DRIVE
IRVING, TEXAS DALLAS 75062

THIS DEALERSHIP IS LICENSED TO ONLY SELL THE FOLLOWING LINE(S) OF NEW MOTOR VEHICLES:

Challenger : BS-Bus, STARCRAFT BUS & MOBILITY : BS-Bus, Crusader : BS-Bus, EC II : BS-Bus, Senator II : BS-Bus, Candidate II : BS-Bus, Arboc : BS-Bus, MV-1 : AA-Passenger Auto, Senator HD : BS-Bus, ELDORADO NATIONAL CALIFORNIA : BS-Bus, ELKHART COACH : BS-Bus, Hometown Trolley : BS-Bus, GLAVAL BUS : BS-Bus, Defender : BS-Bus, Berkshire Coach : BS-Bus, KSIR Bus : BS-Bus, ELDORADO NATIONAL KANSAS : BS-Bus, Goshen : BS-Bus, World Trans : BS-Bus

ADDITIONAL LOCATION(S): For used vehicle sales only
3880 Valley View Ln,Dallas,Irving,Texas,75062-2418

HAVING SATISFIED THE APPLICABLE REQUIREMENTS OF CHAPTER 2301 OF THE TEXAS OCCUPATIONS CODE, CHAPTER 503 OF THE TEXAS TRANSPORTATION CODE, AND THE RULES OF THE BOARD, THE PERSON NAMED ABOVE IS HEREBY LICENSED WITH THE TEXAS DEPARTMENT OF MOTOR VEHICLES, MOTOR VEHICLE DIVISION.

Daniel Avitia

Daniel Avitia, Director
Texas Department of Motor Vehicles
Motor Vehicle Division

WARNING: PENAL CODE SECTION 37.10, PROVIDES THAT TAMPERING WITH A GOVERNMENTAL RECORD IS AN OFFENSE PUNISHABLE AS A SECOND-DEGREE FELONY.

SUPPLEMENTAL LICENSE INFORMATION

Texas Department of Motor Vehicles

MOTOR VEHICLE DIVISION

FRANCHISED MOTOR VEHICLE DEALER

LICENSE NO: C138028

GENERAL DISTINGUISHING NUMBER:

P118245 Motor Vehicle

Creative Bus Sales, Inc.
4955 W NORTHGATE DR.
IRVING, TEXAS MONTGOMERY 75062

EXPIRES: 06-30-2022
PHYSICAL LOCATION:
4955 WEST NORTHGATE DRIVE
IRVING, TEXAS DALLAS 75062

ADDITIONAL LOCATION(S): For used vehicle sales only

WARNING: PENAL CODE SECTION 37.10, PROVIDES THAT TAMPERING WITH A GOVERNMENTAL RECORD IS AN OFFENSE PUNISHABLE AS A SECOND-DEGREE FELONY.

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

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

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Creative Bus Sales, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) 5

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
14740 Ramona Avenue

Requester's name and address (optional)

6 City, state, and ZIP code
Chino, CA 91710

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

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

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

3	3	–	0	3	8	8	7	0	7

Part II Certification

Under penalties of perjury, I certify that:

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

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

Sign Here Signature of U.S. person ▶ [signature] Date ▶ 1/18/2022

General Instructions

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

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

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

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

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

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

Creative Bus Sales

October 12, 2022

To Whom It May Concern:

Creative Bus Sales, Inc. located at 9365 Counselors Row, Suite 112, Indianapolis, IN 46240, hereby authorizes Nicholas (Nick) R. Corley, Transit Bid Manager, to act as an authorized signer on behalf of Creative Bus Sales, Inc. for binding contracts with your organization.

If further information is needed, please feel free to contact me.



_____

T.J. Matijevich, Vice President
Creative Bus Sales, Inc.
800-326-2877
TJ@creativebussales.com

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration U.S. DOT
In accordance with CFR 49, Volume 7, Part 665

Manufacturer:Glaval Bus, A Division of Forest River
Model: Concorde II

Submitted for Testing in Service-Life Category
10 Year /350,000 Miles

MARCH 2017

Report Number: LTI-BT-R1606

The Thomas D. Larson
Pennsylvania Transportation Institute
201 Transportation Research Building
The Pennsylvania State University
University Park, PA 16802
(814) 865-1891

Bus Testing and Research Center
2237 Old Route 220 North
Duncansville, PA 16635
(814) 695-3404

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration U.S. DOT
1200 New Jersey Avenue, SE
Washington, DC 20590

In accordance with CFR 49, Volume 7, Part 665

Manufacturer: Glaval Bus, A Division of Forest River
Manufacturer's address: 914 County Road 1 North Elkhart, IN 46514

Model: Concorde II

Submitted for Testing in Service-Life Category
10 Year /350,000 Miles

Report Number: LTI-BT-R1606

ACCREDITED
Mechanical Testing Certificate 3172.01

Quality Authorization	Director, Bus Research and Testing Center Title	3/7/17 Date

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EXECUTIVE SUMMARY

Glaval Bus, A Division of Forest River submitted a model Concorde II, diesel-powered 41 seat (including the driver) 40-foot bus, for a 10 yr/350,000 mile STURAA test. The odometer reading at the time of delivery was 597 miles. Testing started on March 14, 2016 and was completed on February 17, 2017. The Check-In section of the report provides a description of the bus and specifies its major components.

The primary part of the test program is the Structural Durability Test, which also provides the information for the Maintainability and Reliability results. The Structural Durability Test was started on March 29, 2016 and was completed on February 7, 2017.

The interior of the bus is configured with seating for 41 passengers including the driver. Note: this test bus is not designed to accommodate standing passengers, this results in a potential load of 41 persons. At 150 lbs per person, this load results in a measured gross vehicle weight of 24,330 lbs. The first segment of the Structural Durability Test was performed with the bus loaded to a GVW of 24,330 lbs. The middle seated load weight segment was performed at the same 24,330 lbs and the final segment was performed at a curb weight of 18,160 lbs. Durability driving resulted in unscheduled maintenance and failures that involved a variety of subsystems. A description of failures, and a complete and detailed listing of scheduled and unscheduled maintenance is provided in the Maintainability section of this report.

Effective January 1, 2010 the Federal Transit Administration determined that the total number of simulated passengers used for loading all test vehicles will be based on the full complement of seats and free-floor space available for standing passengers (150 lbs per passenger). The passenger loading used for dynamic testing will not be reduced in order to comply with Gross Axle Weight Ratings (GAWR's) or the Gross Vehicle Weight Ratings (GVWR's) declared by the manufacturer. Cases where the loading exceeds the GAWR and/or the GVWR will be noted accordingly. During the testing program, all test vehicles transported or operated over public roadways will be loaded to comply with the GAWR and GVWR specified by the manufacturer.

Accessibility, in general, was adequate, components covered in Section 1.3 (Repair and/or Replacement of Selected Subsystems) along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted.

The Reliability section compiles failures that occurred during Structural Durability Testing. Breakdowns are classified according to subsystems. The data in this section are arranged so that those subsystems with more frequent problems are apparent. The problems are also listed by class as defined in Section 2. The test bus encountered no Class 1 or Class 2 failures. Of the fourteen reported failures, nine were Class 3 and five were Class 4.

The Safety Test, (a double-lane change, obstacle avoidance test) was safely performed in both right-hand and left-hand directions up to a maximum test speed of 45 mph. The performance of the bus is illustrated by a speed vs. time plot. Acceleration and gradeability test data are provided in Section 4, Performance. The average time to

obtain 50 mph was 22.40 seconds. The Stopping Distance phase of the Brake Test was completed with the following results; for the Uniform High Friction Test average stopping distances were 22.34' at 20 mph, 46.48' at 30 mph, 85.15' at 40 mph and 104.42' at 45 mph. The average stopping distance for the Uniform Low Friction Test was 26.59'. There was no deviation from the test lane during the performance of the Stopping Distance phase. During the Stability phase of Brake Testing the test bus experienced no deviation from the test lane. The Parking Brake phase was completed with the test bus maintaining the parked position for the full five minute period with no slip or roll observed in both the uphill and downhill positions.

The Shakedown Test produced a maximum final loaded deflection of 0.149 inches with a permanent set ranging between -0.004 to 0.001 inches under a distributed static load of 15,375 lbs. The Distortion Test was completed with all subsystems, doors and escape mechanisms operating properly. No water leakage was observed throughout the test. All subsystems operated properly.

The Static Towing Test was performed using a target load (towing force) of 21,792 lbs. All four front pulls were completed to the full test load with no damage or deformation observed. The Dynamic Towing Test was performed by means of a front-lift tow. The towing interface was accomplished using a hydraulic under-lift wrecker. The bus was towed without incident and no damage resulted from the test. The manufacturer does not recommend towing the bus from the rear, therefore, a rear test was not performed. The Jacking and Hoisting Tests were also performed without incident. The bus was found to be stable on the jack stands, and the minimum jacking clearance observed with a tire deflated was 5.5 inches.

A Fuel Economy Test was run on simulated central business district, arterial, and commuter courses. The results were 4.84 mpg, 5.16 mpg, and 9.37 mpg respectively; with an overall average of 5.73 mpg.

A series of Interior and Exterior Noise Tests was performed. These data are listed in Section 7.1 and 7.2 respectively.

The Emissions Test was performed. These results are available in Section 8 of this report.

ABBREVIATIONS

ABTC	-	Altoona Bus Test Center
A/C	-	air conditioner
ADB	-	advance design bus
ATA-MC	-	The Maintenance Council of the American Trucking Association
CBD	-	central business district
CW	-	curb weight (bus weight including maximum fuel, oil, and coolant; but without passengers or driver)
dB(A)	-	decibels with reference to 0.0002 microbar as measured on the "A" scale
DIR	-	test director
DR	-	bus driver
EPA	-	Environmental Protection Agency
FFS	-	free floor space (floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area)
GVL	-	gross vehicle load (150 lb for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space)
GVW	-	gross vehicle weight (curb weight plus gross vehicle load)
GVWR	-	gross vehicle weight rating
MECH	-	bus mechanic
mpg	-	miles per gallon
mph	-	miles per hour
PM	-	Preventive maintenance
PSTT	-	Penn State Test Track
PTI	-	Pennsylvania Transportation Institute
rpm	-	revolutions per minute
SAE	-	Society of Automotive Engineers
SCH	-	test scheduler
SA	-	staff assistant
SLW	-	seated load weight (curb weight plus 150 lb for every designed passenger seating position and for the driver)
STURAA	-	Surface Transportation and Uniform Relocation Assistance Act
TD	-	test driver
TECH	-	test technician
TM	-	track manager
TP	-	test personnel

TEST BUS CHECK-IN

I. OBJECTIVE

The objective of this task is to log in the test bus, assign a bus number, complete the vehicle data form, and perform a safety check.

II. TEST DESCRIPTION

The test consists of assigning a bus test number to the bus, cleaning the bus, completing the vehicle data form, obtaining any special information and tools from the manufacturer, determining a testing schedule, performing an initial safety check, and performing the manufacturer's recommended preventive maintenance. The bus manufacturer must certify that the bus meets all Federal regulations.

III. DISCUSSION

The check-in procedure is used to identify in detail the major components and configuration of the bus.

The test bus consists of a Glaval Bus, A Division of Forest River, model Concorde II. The bus has an OEM driver’s door and a cab passenger door rear the front axle. The passenger entry door is located rear of the cab passenger door and a rear cargo door is centered at the rear of the bus. Power is provided by a diesel-fueled, Ford model 6.7 L Powerstroke engine coupled to a Ford model Tourqueshift 6 transmission.

The measured curb weight is 7,890 lbs for the front axle and 10,270 lbs for the rear axle. These combined weights provide a total measured curb weight of 18,160 lbs. There are 41 seats including the driver. Note: this test bus is not designed for standing passengers therefore the total passenger capacity is 41. Gross load is 150 lb x 41 = 6,150 lbs. At full capacity, the measured gross vehicle weight is 24,330 lbs

Bus Number: 1606	Date: 3-14-16
Bus Manufacturer: Glaval Bus, A Division of Forest River	Vehicle Identification Number (VIN): 1FDNF6DC8GDA00256
Model Number: Concorde II	Chassis Mfr./Mod.#: Ford / F-650 Super Duty
Personnel: E.D. & S.R.	Starting Odometer Reading: 597

WEIGHT:

Individual Wheel Reactions:

Weights (lb)	Front Axle		Middle Axle		Rear Axle	
	Curb	Street	Curb	Street	Curb	Street
CW	3,890	4,000	N/A	N/A	5,120	5,150
SLW	4,250	4,430	N/A	N/A	7,780	7,870
GVW	4,250	4,430	N/A	N/A	7,780	7,870

Total Weight Details:

Weight (lb)	CW	SLW	GVW	GAWR
Front Axle	7,890	8,680	8,680	10,000
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	10,270	15,650	15,650	19,000
Total	18,160	24,330	24,330	GVWR: 25,999

Dimensions:

Length (ft/in)	40 / 5.75
Width (in)	102.0
Height (in)	129.0
Front Overhang (in)	37.75
Rear Overhang (in)	166.0
Wheel Base (in)	282.0
Wheel Track (in)	Front: 81.7
	Middle: N/A
	Rear: 72.6

Bus Number: 1606	Date: 3-14-16

CLEARANCES:

Lowest Point Outside Front Axle	Location: Sway bar bracket Clearance(in): 15.1
Lowest Point Outside Rear Axle	Location: Exhaust clamp Clearance(in): 20.0
Lowest Point between Axles	Location: Stepwell Clearance(in): 11.5
Ground Clearance at the center (in)	16.0
Front Approach Angle (deg)	25.1
Rear Approach Angle (deg)	7.4
Ramp Clearance Angle (deg)	4.6
Aisle Width (in)	Front – 17.2 Rear – 18.1
Inside Standing Height at Center Aisle (in)	80.6

BODY DETAILS:

Body Structural Type	Integral		
Frame Material	Steel		
Body Material	Steel		
Floor Material	Plywood		
Roof Material	Composite		
Windows Type	■ Fixed	■ Movable	
Window Mfg./Model No.	Cleer Vision Windows / AS3 DOT 960 Z-206.1-1996		
Number of Doors	_2_ Front	_1_ Rear	_1_ Passenger
Mfr. / Model No.	Ford / OEM	Glaval Bus / N/A	A&MSystems / 143287A1G4
Dimension of Each Door (in)	Driver – 32.4 x 47.3 Pass cab – 47.3 x 33.5	Rear – 70.2 x 34.2	Pass – 87.2 x 26.2
Passenger Seat Type	☐ Cantilever	■ Pedestal	☐ Other (explain)
Driver Seat Type	■ Air	☐ Spring	☐ Other (explain)
Mfr. / Model No.	Ford / OEM		
Number of Seats (including Driver)	41		

Bus Number: 1606	Date: 3-14-16

BODY DETAILS (Contd..)

Free Floor Space (ft^2)	33.8			
Height of Each Step at Normal Position (in)	Front 1. 14.1	2. 9.6	3. 9.5	4. 9.6
	Middle 1. N/A	2. N/A	3. N/A	4. N/A
	Rear 1. N/A	2. N/A	3. N/A	4. N/A
Step Elevation Change - Kneeling (in)	N/A			

ENGINE

Type	■ C.I.	☐ Alternate Fuel	
	☐ S.I.	☐ Other (explain)	
Mfr. / Model No.	Ford Motor Co. / Ford 6.7 L Powerstroke		
Location	■ Front	☐ Rear	☐ Other (explain)
Fuel Type	☐ Gasoline	☐ CNG	☐ Methanol
	■ Diesel	☐ LNG	☐ Other (explain)
Alternator (Generator) Mfr. / Model No.	Ford / 157 & 200 Amp Dual		
Maximum Rated Output (Volts / Amps)	24 / 200		
Air Compressor Mfr. / Model No.	Bendix / 2TU-FLO 550		
Maximum Capacity (ft^3 / min)	13.2		
Starter Type	■ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Ford Motor Co. / OEM		

Bus Number: 1606	Date: 3-14-16

TRANSMISSION

Transmission Type	☐ Manual	■ Automatic	☐ Load Sensing Adaptive
Mfr. / Model No.	Ford Motor Co. / Torqueshift 6		
Control Type	■ Mechanical	☐ Electrical	☐ Other
Integral Retarder	☐ Yes	■ No	

SUSPENSION

Number of Axles	2		
Front Axle Type	☐ Independent	■ Beam Axle	
Mfr. / Model No.	Spicer / OEM		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	■ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Sachs / F044-18045-BB		
Middle Axle Type	☐ Independent	☐ Beam Axle	
Mfr. / Model No.	N/A		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	N/A		
Mfr. / Model No.	N/A		
Rear Axle Type	☐ Independent	■ Beam Axle	
Mfr. / Model No.	Spicer / OEM		
Axle Ratio (if driven)	4.29		
Suspension Type	■ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Hendrickson / 015186/60670-11/10679		

Bus Number: 1606	Date: 3-14-16

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Hayes Lemmer / 22.5 x 7.50
	Tire Mfr./ Model No.	Goodyear G661 / 255 70R/22.5
Rear	Wheel Mfr./ Model No.	Hayes Lemmer / 22.5 x 7.50
	Tire Mfr./ Model No.	Goodyear G661 / 255 70R/22.5

BRAKES

Front Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Meritor / 60450478006		
Middle Axle Brakes Type	☐ Cam	☐ Disc	☐ Other (explain)
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Meritor / N/A		

HVAC

Heating System Type	☐ Air	■ Water	☐ Other
Capacity (Btu/hr)	132,000		
Mfr. / Model No.	Pro-Air / (2) 65K Floor Heaters		
Air Conditioner	■ Yes	☐ No	
Location	2 – Roof		
Capacity (Btu/hr)	310 / CFM		
A/C Compressor Mfr. / Model No.	Que-QP21-1667 / 21NG0928		TCCI / 51H7PQ / NG27184

STEERING

Steering Gear Box Type	Hydraulic gear		
Mfr. / Model No.	Ford Motor Co. /OEM		
Steering Wheel Diameter	17.3		
Number of turns (lock to lock)	4.25		
Control Type	☐ Electric	■ Hydraulic	☐ Other (expain)

Bus Number: 1606	Date: 3-14-16

OTHERS

Wheel Chair Ramps	Location: N/A	Type: N/A
Wheel Chair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	N/A	
Emergency Exit	Location: Windows Doors Roof hatch	Number: 3 3 1

CAPACITIES

Fuel Tank Capacity (gallons)	65
Engine Crankcase Capacity (gallons)	Unknown Fill to Line
Transmission Capacity (gallons)	Unknown Fill to Line
Differential Capacity (gallons)	Unknown
Cooling System Capacity (gallons)	Unknown Fill to Line
Power Steering Fluid Capacity (quarts)	Unknown Fill to Line

VEHICLE DATA FORM

Bus Number: 1606	Date: 3-14-16

List all spare parts, tools and manuals delivered with the bus.

Part Number	Description	Qty.
N/A	Tires & rims	6
FA-1923	Air filter	2
Fl-2051S	Oil Filter	2
FT-187	Transmission filter	2
JK8-1403-FC4Z-8620-F	Belt	1
JK4-326-A	Belt	1
FC4Z-18124-A	Shock	2
FC4Z-18125-D	Shock	2

COMPONENT/SUBSYSTEM INSPECTION FORM

Bus Number: 1606	Date: 3-14-16

Subsystem	Checked	Initials	Comments
Air Conditioning Heating and Ventilation	✓	E.D.	N/A
Body and Sheet Metal	✓	E.D.	N/A
Frame	✓	E.D.	N/A
Steering	✓	E.D.	N/A
Suspension	✓	E.D.	N/A
Interior/Seating	✓	E.D.	N/A
Axles	✓	E.D.	N/A
Brakes	✓	S.R.	N/A
Tires/Wheels	✓	S.R.	N/A
Exhaust	✓	S.R.	N/A
Fuel System	✓	S.R.	N/A
Power Plant	✓	S.R.	N/A
Accessories	✓	S.R.	N/A
Lift System	✓	S.R.	N/A
Interior Fasteners	✓	S.R.	N/A
Batteries	✓	S.R.	N/A

CHECK - IN



GLAVAL BUS, A DIVISION OF FOREST RIVER
MODEL CONCORDE II



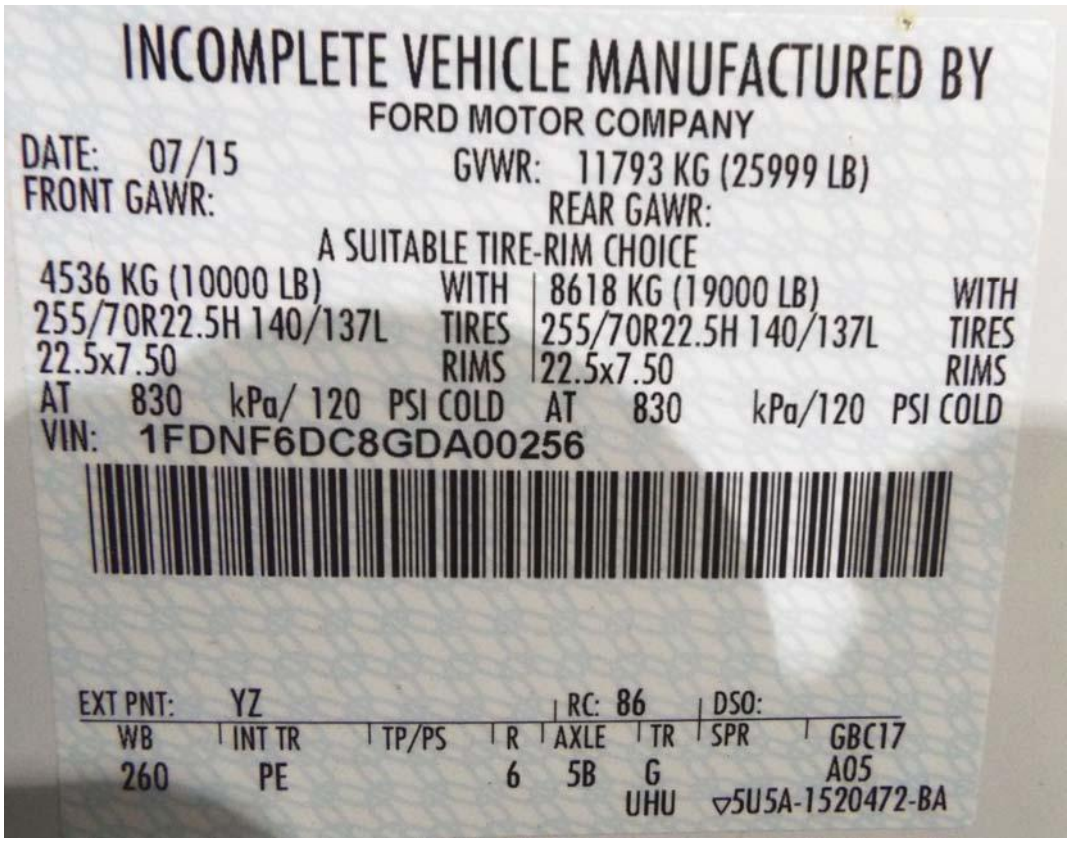
CHECK - IN CONT.



GLAVAL BUS, A DIVISION OF FOREST RIVER
MODEL CONCORDE II



CHECK - IN CONT.



VIN TAG



OPERATOR'S AREA

CHECK - IN CONT.



INTERIOR
FRONT TO REAR



INTERIOR
REAR TO FRONT

CHECK - IN CONT.



ENGINE COMPARTMENT



1. MAINTAINABILITY

1.1 ACCESSIBILITY OF COMPONENTS AND SUBSYSTEMS

1.1-I. TEST OBJECTIVE

The objective of this test is to check the accessibility of components and subsystems.

1.1-II. TEST DESCRIPTION

Accessibility of components and subsystems is checked, and where accessibility is restricted the subsystem is noted along with the reason for the restriction.

1.1-III. DISCUSSION

Accessibility, in general, was adequate. Components covered in Section 1.3 (repair and/or replacement of selected subsystems), along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted.

ACCESSIBILITY DATA FORM

Bus Number: 1606	Date: 02-08-17

Component	Checked	Comments
ENGINE :		
Oil Dipstick	✓	None Noted
Oil Filler Hole	✓	None Noted
Oil Drain Plug	✓	None Noted
Oil Filter	✓	None Noted
Fuel Filter	✓	None Noted
Air Filter	✓	None Noted
Belts	✓	None Noted
Coolant Level	✓	None Noted
Coolant Filler Hole	✓	None Noted
Coolant Drain	✓	None Noted
Spark / Glow Plugs	✓	None Noted
Alternator	✓	None Noted
Diagnostic Interface Connector	✓	None Noted
TRANSMISSION :		
Fluid Dip-Stick	✓	None Noted
Filler Hole	✓	None Noted
Drain Plug	✓	None Noted
SUSPENSION :		
Bushings	✓	None Noted
Shock Absorbers	✓	None Noted
Air Springs	✓	None Noted
Leveling Valves	✓	None Noted
Grease Fittings	✓	None Noted

ACCESSIBILITY DATA FORM

Bus Number: 1606	Date: 02-08-17

Component	Checked	Comments
HVAC :		
A/C Compressor	✓	None Noted
Filters	✓	None Noted
Fans	✓	None Noted
ELECTRICAL SYSTEM :		
Fuses	✓	None Noted
Batteries	✓	None Noted
Voltage regulator	✓	None Noted
Voltage Converters	**N/A**	None Noted
Lighting	✓	None Noted
MISCELLANEOUS :		
Brakes	✓	None Noted
Handicap Lifts/Ramps	**N/A**	None Noted
Instruments	✓	None Noted
Axles	✓	None Noted
Exhaust	✓	None Noted
Fuel System	✓	None Noted
OTHERS :		N/A

1.2 SERVICING, PREVENTIVE MAINTENANCE, AND REPAIR AND MAINTENANCE DURING TESTING

1.2-I. TEST OBJECTIVE

The objective of this test is to collect maintenance data about the servicing, preventive maintenance, and repair.

1.2.-II. TEST DESCRIPTION

The test will be conducted by operating the NBM and collecting the following data on work order forms and a driver log.

1. Unscheduled Maintenance
    a. Bus number
    b. Date
    c. Mileage
    d. Description of malfunction
    e. Location of malfunction (e.g., in service or undergoing inspection)
    f. Repair action and parts used
    g. Man-hours required

2. Scheduled Maintenance
    a. Bus number
    b. Date
    c. Mileage
    d. Engine running time (if available)
    e. Results of scheduled inspections
    f. Description of malfunction (if any)
    g. Repair action and parts used (if any)
    h. Man-hours required

The buses will be operated in accelerated durability service. While typical items are given below, the specific service schedule will be that specified by the manufacturer.

A. Service
    1. Fueling
    2. Consumable checks
    3. Interior cleaning

B. Preventive Maintenance
    1. Brake adjustments
    2. Lubrication
    3. 3,000 mi (or equivalent) inspection

4. Oil and filter change inspection
5. Major inspection
6. Tune-up

C. Periodic Repairs
1. Brake reline
2. Transmission change
3. Engine change
4. Windshield wiper motor change
5. Stoplight bulb change
6. Towing operations
7. Hoisting operations

1.2-III. DISCUSSION

Servicing and preventive maintenance were performed at manufacturer-specified intervals. The following Scheduled Maintenance Form lists the mileage, items serviced, the service interval, and amount of time required to perform the maintenance. Finally, the Unscheduled Maintenance List along with Unscheduled Maintenance-related photographs is included in Section 5.7, Structural Durability. This list supplies information related to failures that occurred during the durability portion of testing. The Unscheduled Maintenance List includes the date and mileage at which the malfunction occurred, a description of the malfunction and repair, and the time required to perform the repair.

(Page 1 of 2)
SCHEDULED MAINTENANCE
GLAVAL Bus #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
04-15-16	1,386	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
07-06-16	2,273	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
08-15-16	3,034	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
09-06-16	4,150	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
09-26-16	5,878	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-09-16	7,002	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-16-16	8,217	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
01-06-17	10,664	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
01-25-16	11,146	P.M./Inspection Fuel Economy Prep	Linkage, tie rods, universals/u-joints all lubed. Oil changed. Oil, fuel, and air filters changed. Transmission oil and filter changed.	8.00	8.00

(Page 2 of 2)
SCHEDULED MAINTENANCE
GLAVAL Bus #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
02-03-17	11,249	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

1.3-I. TEST OBJECTIVE

The objective of this test is to establish the time required to replace and/or repair selected subsystems.

1.3-II. TEST DESCRIPTION

The test will involve components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that fails during the NBM testing is added to this list. Components to be included are:

1. Transmission
2. Alternator
3. Starter
4. Batteries
5. Windshield wiper motor

1.3-III. DISCUSSION

During the test, several additional components were removed for repair or replacement. Following is a list of components and total repair/replacement time.

	MAN HOURS
Rear bumper step replaced, weled/repaired.	3.0
Fuel tank replaced.	6.0
Lower radiator hose modification.	3.0
Front sway bar.	2.0
A/C compressor replaced, evac. & charge.	8.0
Both rear shocks.	4.0

At the end of the test, the remaining items on the list were removed and replaced. The transmission assembly took 16.0 man-hours (two men 8.0 hrs) to remove and replace. The time required for repair/replacement of the four remaining components is given on the following Repair and/or Replacement Form.

REPLACEMENT AND/OR REPAIR FORM

Subsystem	Replacement Time
Transmission	16.0 man hours
Wiper Motor	1.0 man hours
Starter	1.5 man hours
Alternator	3.0 man hours
Batteries	1.0 man hours

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS



TRANSMISSION REMOVAL AND REPLACEMENT (16.0 MAN HOURS)



WIPER MOTOR REMOVAL AND REPLACEMENT (1.0 MAN HOURS)

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.



STARTER REMOVAL AND REPLACEMENT
(1.5 MAN HOURS)



ALTERNATOR X2 REMOVAL AND REPLACEMENT
(3.0 MAN HOURS)

2. RELIABILITY - DOCUMENTATION OF BREAKDOWN AND REPAIR TIMES DURING TESTING

2-I. TEST OBJECTIVE

The objective of this test is to document unscheduled breakdowns, repairs, down time, and repair time that occur during testing.

2-II. TEST DESCRIPTION

Using the driver log and unscheduled work order forms, all significant breakdowns, repairs, man-hours to repair, and hours out of service are recorded on the Reliability Data Form.

CLASS OF FAILURES

Classes of failures are described below:

(a) Class 1: Physical Safety. A failure that could lead directly to passenger or driver injury and represents a severe crash situation.

(b) Class 2: Road Call. A failure resulting in an en route interruption of revenue service. Service is discontinued until the bus is replaced or repaired at the point of failure.

(c) Class 3: Bus Change. A failure that requires removal of the bus from service during its assignments. The bus is operable to a rendezvous point with a replacement bus.

(d) Class 4: Bad Order. A failure that does not require removal of the bus from service during its assignments but does degrade coach operation. The failure shall be reported by driver, inspector, or hostler.

2-III. DISCUSSION

A listing of breakdowns and unscheduled repairs is accumulated during the Structural Durability Test. The following Reliability Data Form lists all unscheduled repairs under classes as defined above. These classifications are somewhat subjective as the test is performed on a test track with careful inspections every two hours. However, even on the road, there is considerable latitude on deciding how to handle many failures.

The Unscheduled Repair List is also attached to provide a reference for the repairs that are included in the Reliability Data Forms.

The classification of repairs according to subsystem is intended to emphasize those systems which had persistent minor or more serious problems. There were no Class 1 or 2 failures. Of the nine Class 3 failures, two each occurred in the cooling system, suspension and electrical system. One each involved the body, air conditioning and fuel system. These, and the remaining five Class 4 failures are available for review in the Unscheduled Maintenance List, located in Section 5.7 Structural Durability.

RELIABILITY DATA FORM

Bus Number: 1606	Date Completed: 1-25-17
Personnel: B.R.	

	Failure Type					
	Class 4 Bad order	Class 3 Bus Change	Class 2 Road Call	Class 1 Physical Safety		
Subsystem	Mileage	Mileage	Mileage	Mileage	Man hours	Down Time
Body	2,273				3.0	12.0
	9,863				1.0	4.0
		10,411			2.0	2.0
Cooling system		1,528			16.0	240.0
	2,860				3.0	3.0
		9,863			4.0	16.0
Suspension		5,782			2.0	16.0
	10,664				4.0	6.0
		10,664			2.0	6.0
Air conditioning		5,873*			2.0	2.0
		5,929*			8.0	288.0
Electrical		638			2.0	2.0
		4,160			2.0	72.0
Exhaust	7,002				2.0	2.0
Fuel System		2,860			6.0	320.0

*** Combined as 1 failure.**

3. SAFETY - A DOUBLE-LANE CHANGE (OBSTACLE AVOIDANCE)

3-I. TEST OBJECTIVE

The objective of this test is to determine handling and stability of the bus by measuring speed through a double lane change test.

3-II. TEST DESCRIPTION

The Safety Test is a vehicle handling and stability test. The bus will be operated at SLW on a smooth and level test track. The bus will be driven through a double lane change course at increasing speed until the test is considered unsafe or a speed of 45 mph is reached. The lane change course will be set up using pylons to mark off two 12 foot center to center lanes with two 100 foot lane change areas 100 feet apart. The bus will begin in one lane, change to the other lane in a 100 foot span, travel 100 feet, and return to the original lane in another 100 foot span. This procedure will be repeated, starting first in the right-hand and then in the left-hand lane.

3-III. DISCUSSION

The double-lane change was performed in both right-hand and left-hand directions. The bus was able to safely negotiate the test course in both the right-hand and left-hand directions up to the maximum test speed of 45 mph.

SAFETY DATA FORM

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	

Temperature (°F): 33	Humidity (%): 67
Wind Direction: N	Wind Speed (mph): Calm
Barometric Pressure (in.Hg): 30.20	

SAFETY TEST: DOUBLE LANE CHANGE	
Maximum safe speed tested for double-lane change to left	45 mph
Maximum safe speed tested for double-lane change to right	45 mph
Comments of the position of the bus during the lane change:	
The vehicle maintained a safe profile through all portions of testing.	
Comments of the tire/ground contact patch:	
The vehicle maintained the tire/ground patch through all portions of testing.	



RIGHT - HAND APPROACH



LEFT - HAND APPROACH

4.0 PERFORMANCE

4.1 PERFORMANCE - AN ACCELERATION, GRADEABILITY, AND TOP SPEED TEST

4.1-I. TEST OBJECTIVE

The objective of this test is to determine the acceleration, gradeability, and top speed capabilities of the bus.

4.1-II. TEST DESCRIPTION

In this test, the bus will be operated at SLW on the skid pad at the PSBRTF. The bus will be accelerated at full throttle from a standstill to a maximum "geared" or "safe" speed as determined by the test driver. The vehicle speed is measured using a Correvit non-contacting speed sensor. The times to reach speed between ten mile per hour increments are measured and recorded using a stopwatch with a lap timer. The time to speed data will be recorded on the Performance Data Form and later used to generate a speed vs. time plot and gradeability calculations.

4.1-III. DISCUSSION

This test consists of three runs in both the clockwise and counterclockwise directions on the Test Track. Velocity versus time data is obtained for each run and results are averaged together to minimize any test variability which might be introduced by wind or other external factors. The test was performed up to a maximum speed of 50 mph. The fitted curve of velocity vs. time is attached, followed by the calculated gradeability results. The average time to obtain 50 mph was 22.40 seconds.

PERFORMANCE DATA FORM

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	

Temperature (°F): 32	Humidity (%): 67
Wind Direction: NNE	Wind Speed (mph): Calm
Barometric Pressure (in.Hg): 30.20	

		INITIALS:
Air Conditioning - OFF	✓Checked	S.R.
Ventilation fans - ON HIGH	✓Checked	S.R.
Heater pump motor - OFF	✓Checked	S.R.
Defroster - OFF	✓ Checked	S.R.
Exterior and interior lights - ON	✓ Checked	S.R.
Windows and doors - CLOSED	✓ Checked	S.R.

ACCELERATION, GRADEABILITY, TOP SPEED

Counter Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	2.62	2.65	2.52
20 mph	5.46	4.99	4.85
30 mph	8.89	8.61	8.56
40 mph	14.65	14.32	14.09
Top Test Speed(mph) 50	24.11	23.39	23.23

Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	2.29	2.39	2.69
20 mph	4.51	4.80	4.88
30 mph	7.83	8.36	8.47
40 mph	13.34	13.71	13.85
Top Test Speed(mph) 50	21.07	21.27	21.31

PERFORMANCE SUMMARY SHEET

BUS MANUFACTURER :Glaval Bus
BUS MODEL :Concorde II
BUS NUMBER :1606
TEST DATE :01-16-17

TEST CONDITIONS :

TEMPERATURE (DEG F) : 32.0
WIND DIRECTION : NNE
WIND SPEED (MPH) : .0
HUMIDITY (%) : 67
BAROMETRIC PRESSURE (IN. HG) : 30.2

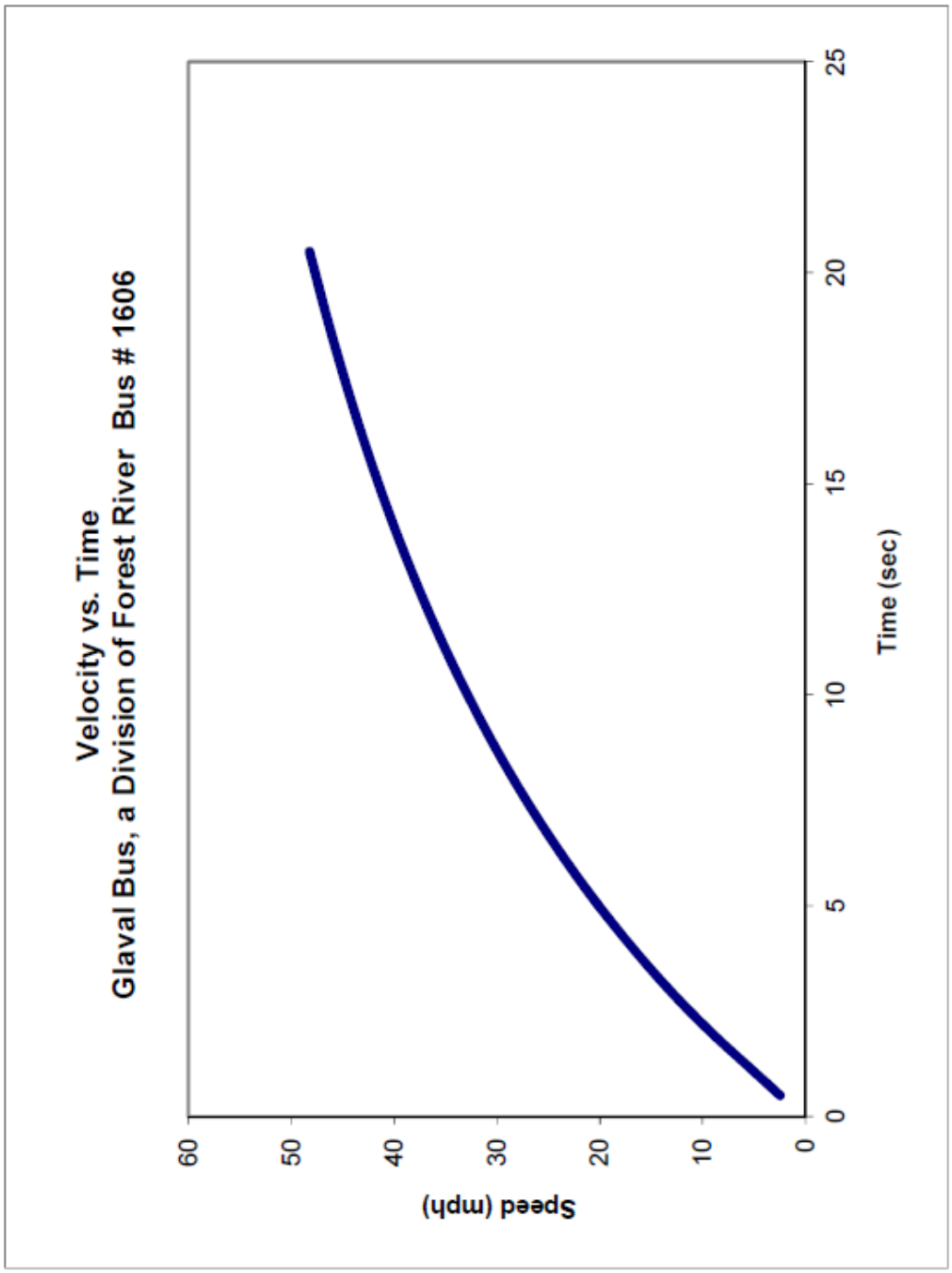
VEHICLE SPEED	AVERAGE TIME (SEC)		
(MPH)	CCW DIRECTION	CW DIRECTION	TOTAL
10.0	2.60	2.46	2.53
20.0	5.10	4.73	4.92
30.0	8.69	8.22	8.45
40.0	14.35	13.63	13.99
50.0	23.58	21.22	22.40

TEST SUMMARY :

VEHICLE SPEED (MPH)	TIME (SEC)	ACCELERATION (FT/SEC^2)	MAX. GRADE (%)
1.0	.20	7.3	23.4
5.0	1.03	6.7	21.4
10.0	2.18	6.0	19.0
15.0	3.48	5.3	16.7
20.0	4.96	4.6	14.5
25.0	6.67	4.0	12.4
30.0	8.68	3.4	10.5
35.0	11.07	2.8	8.7
40.0	13.98	2.3	7.1
45.0	17.62	1.8	5.6
50.0	22.33	1.4	4.2

NOTE : Gradeability results were calculated from performance
---- test data. Actual sustained gradeability performance
for vehicles equipped with auto transmission may be
lower than the values indicated here.

Velocity Curve



4.0 PERFORMANCE

4.2 Performance - Bus Braking

4.2 I. TEST OBJECTIVE

The objective of this test is to provide, for comparison purposes, braking performance data on transit buses produced by different manufacturers.

4.2 II. TEST DESCRIPTION

The testing will be conducted at the PTI Test Track skid pad area. Brake tests will be conducted after completion of the GVW portion of the vehicle durability test. At this point in testing the brakes have been subjected to a large number of braking snubs and will be considered well burnished. Testing will be performed when the bus is fully loaded at its GVW. All tires on each bus must be representative of the tires on the production model vehicle

The brake testing procedure comprises three phases:

1. Stopping distance tests

    i. Dry surface (high-friction, Skid Number within the range of 70-76)
    ii. Wet surface (low-friction, Skid Number within the range of 30-36)

2. Stability tests
3. Parking brake test

Stopping Distance Tests

The stopping distance phase will evaluate service brake stops. All stopping distance tests on dry surface will be performed in a straight line and at the speeds of 20, 30, 40 and 45 mph. All stopping distance tests on wet surface will be performed in straight line at speed of 20 mph.

The tests will be conducted as follows:

1. **Uniform High Friction Tests:** Four maximum deceleration straight-line brake applications each at 20, 30, 40 and 45 mph, to a full stop on a uniform high-friction surface in a 3.66-m (12-ft) wide lane.

2. **Uniform Low Friction Tests:** Four maximum deceleration straight-line brake applications from 20 mph on a uniform low friction surface in a 3.66-m (12-ft) wide lane.

When performing service brake stops for both cases, the test vehicle is accelerated on the bus test lane to the speed specified in the test procedure and this speed is maintained into the skid pad area. Upon entry of the appropriate lane of the skid pad area, the vehicle's service brake is applied to stop the vehicle as quickly as possible. The stopping distance is measured and recorded for both cases on the test

data form. Stopping distance results on dry and wet surfaces will be recorded and the average of the four measured stopping distances will be considered as the measured stopping distance. Any deviation from the test lane will be recorded.

Stability Tests

This test will be conducted in both directions on the test track. The test consists of four maximum deceleration, straight-line brake applications on a surface with split coefficients of friction (i.e., the wheels on one side run on high-friction SN 70-76 or more and the other side on low-friction [where the lower coefficient of friction should be less than half of the high one] at initial speed of 30 mph).

(I) The performance of the vehicle will be evaluated to determine if it is possible to keep the vehicle within a 3.66m (12 ft) wide lane, with the dividing line between the two surfaces in the lane's center. The steering wheel input angle required to keep the vehicle in the lane during the maneuver will be reported.

Parking Brake Test

The parking brake phase utilizes the brake slope, which has a 20% grade. The test vehicle, at its GVW, is driven onto the brake slope and stopped. With the transmission in neutral, the parking brake is applied and the service brake is released. The test vehicle is required to remain stationary for five minutes. The parking brake test is performed with the vehicle facing uphill and downhill.

4.2-III. DISCUSSION

The Stopping Distance phase of the Brake Test was completed with the following results; for the Uniform High Friction Test average stopping distances were 22.34' at 20 mph, 46.48' at 30 mph, 85.15' at 40 mph and 104.42' at 45 mph. The average stopping distance for the Uniform Low Friction Test was 26.59' There was no deviation from the test lane during the performance of the Stopping Distance phase.

During the Stability phase of Brake Testing the test bus experienced no deviation from the test lane during both approaches to the Split Friction Road surface.

The Parking Brake phase was completed with the test bus maintaining the parked position for the full five minute period with no slip or roll observed in both the uphill and downhill positions.

Table 4.2-6. Braking Test Data Forms

Bus Number: 1606	Date: 10-26-16
Personnel: S.R., E.D., P.D. & M.H.	
Amb. Temperature (°F): 36	Wind Speed (mph): 2
Wind Direction: NNE	Pavement Temp (°F) Start: 48 End: 54

TIRE INFLATION PRESSURE (psi):

Tire Type: Front: Goodyear/G661 Rear: Goodyear/G661

	Left Tire(s)		Right Tire(s)	
Front	120		120	
	Inner	Outer	Inner	Outer
Rear	N/A	N/A	N/A	N/A
Rear	120	120	120	120

AXLE LOADS (lb)

	Left	Right
Front	4,430	4,250
Rear	N/A	N/A
Rear	7,870	7,780

Table 4.2-7. Record of All Braking System Faults/Repairs.

Date	Fault/Repair	Description
10-26-16	None noted.	None noted.

Table 4.2-8.1. Stopping Distance Test Results Form

Stopping Distance (ft)					
Vehicle Direction	CW	CW	CCW	CCW	
Speed (mph)	**Stop 1**	**Stop 2**	**Stop 3**	**Stop 4**	**Average**
20 (dry)	21.74	21.38	22.10	24.14	22.34
30 (dry)	47.19	44.90	46.80	47.00	46.48
40 (dry)	93.05	83.86	81.93	81.73	85.15
45 (dry)	115.58	104.86	102.36	94.85	104.42
20 (wet)	27.30	28.47	24.56	26.01	26.59

Table 4.2-8.2. Stability Test Results Form

Stability Test Results (Split Friction Road surface)			
Vehicle Direction	Attempt	Did test bus stay in 12' lane? (yes/no)	Comments
Drivers side on high friction	1	Yes	None noted
	2	Yes	None noted
Drivers side on low friction	1	Yes	None noted
	2	Yes	None noted

Table 4.2-8.3. Parking Brake Test Form

PARKING BRAKE (Fully Loaded) – GRADE HOLDING						
Vehicle Direction	Attempt	Hold Time (min)	Slide (in)	Roll (in)	Did Hold	No Hold
Front up	1	5:00	0	0	X	
	2	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A
Front down	1	5:00	0	0	X	
	2	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A

4.2 Performance - Bus Braking



20% UPHILL



20% DOWNHILL

5.1 STRUCTURAL INTEGRITY

5.1 STRUCTURAL STRENGTH AND DISTORTION TESTS – STRUCTURAL SHAKEDOWN TEST

5.1-I. DISCUSSION

The objective of this test is to determine certain static characteristics (e.g., bus floor deflection, permanent structural deformation, etc.) under static loading conditions.

5.1-II. TEST DESCRIPTION

In this test, the bus will be isolated from the suspension by blocking the vehicle under the suspension points. The bus will then be loaded and unloaded up to a maximum of three times with a distributed load equal to 2.5 times gross load. Gross load is 150 lb for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space. For a distributed load equal to 2.5 times gross load, place a 375-lb load on each seat and on every 1.5 sq ft of free floor space. The first loading and unloading sequence will "settle" the structure. Bus deflection will be measured at several locations during the loading sequences.

5.1-III. DISCUSSION

This test was performed based on a maximum passenger capacity of 41 people including the driver. The resulting test load is (41 X 375 lb) = 15,375 lb. The load is distributed evenly over the passenger space. Deflection data before and after each loading and unloading sequence is provided on the Structural Shakedown Data Form.

The unloaded height after each test becomes the original height for the next test. Some initial settling is expected due to undercoat compression, etc. After each loading cycle, the deflection of each reference point is determined. The bus is then unloaded and the residual (permanent) deflection is recorded. On the final test, the maximum loaded deflection was 0.149 inches at reference point 4. The maximum permanent deflection after the final loading sequence ranged from -0.004 inches at reference point 1 to 0.001 inches at reference point 7.

STRUCTURAL SHAKEDOWN DATA FORM

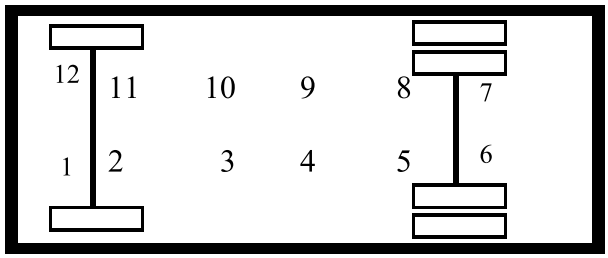
Bus Number: 1606	Date: 3-18-16
Personnel: S.R., E.L., J.P., J.S., M.H., C.S., R.S. & M.R.	Temperature (°F): 65
Loading Sequence: ■ 1 ☐ 2 ☐ 3 (check one) Test Load (lbs): 15,375 (41 seated passengers)	

Indicate Approximate Location of Each Reference Point

Right

Front of Bus

Left



Top View

Reference Point No.	A (in) Original Height	B (in) Loaded Height	B-A (in) Loaded Deflection	C (in) Unloaded Height	C-A (in) Permanent Deflection
1	0	-.081	-.081	-.003	-.003
2	0	.091	.091	.009	.009
3	0	.137	.137	.012	.012
4	0	.149	.149	.013	.013
5	0	.111	.111	.013	.013
6	0	.179	.179	.016	.016
7	0	.170	.170	.011	.011
8	0	.079	.079	.009	.009
9	0	.129	.129	.011	.011
10	0	.134	.134	.011	.011
11	0	.054	.054	.006	.006
12	0	-.078	-.078	.000	.000

STRUCTURAL SHAKEDOWN DATA FORM

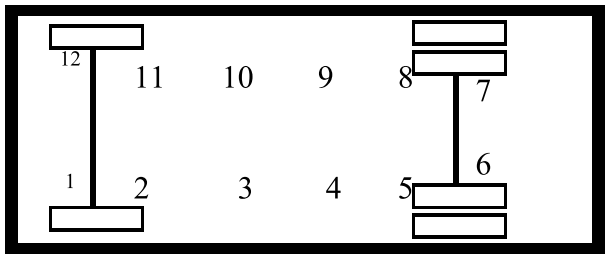
Bus Number: 1606	Date: 3-18-16
Personnel: S.R., E.L., J.P., J.S., M.H., C.S., R.S. & M.R.	Temperature (°F): 64
Loading Sequence: ☐ 1 ■ 2 ☐ 3 (check one) Test Load (lbs): 15,375 (41 seated passengers)	

Indicate Approximate Location of Each Reference Point

Right

Front of Bus

Left



Top View

Reference Point No.	A (in) Original Height	B (in) Loaded Height	B-A (in) Loaded Deflection	C (in) Unloaded Height	C-A (in) Permanent Deflection
1	-.003	-.092	-.095	-.001	-.004
2	.009	.099	.090	.008	-.001
3	.012	.148	.136	.011	-.001
4	.013	.162	.149	.013	.000
5	.013	.122	.109	.012	-.001
6	.016	.158	.142	.014	-.002
7	.011	.148	.137	.012	.001
8	.009	.091	.082	.009	.000
9	.011	.144	.133	.009	-.002
10	.011	.148	.137	.009	-.002
11	.006	.061	.055	.004	-.002
12	.000	-.087	-.087	-.001	-.001

5.1 STRUCTURAL SHAKEDOWN TEST



DIAL INDICATORS IN POSITION



BUS LOADED TO 2.5 TIMES GVL
(15,375 LBS)

5.2 STRUCTURAL STRENGTH AND DISTORTION TESTS - STRUCTURAL DISTORTION

5.2-I. TEST OBJECTIVE

The objective of this test is to observe the operation of the bus subsystems when the bus is placed in a longitudinal twist simulating operation over a curb or through a pothole.

5.2-II. TEST DESCRIPTION

With the bus loaded to GVWR, each wheel of the bus will be raised (one at a time) to simulate operation over a curb and the following will be inspected:

1. Body
2. Windows
3. Doors
4. Roof vents
5. Special seating
6. Undercarriage
7. Engine
8. Service doors
9. Escape hatches
10. Steering mechanism

Each wheel will then be lowered (one at a time) to simulate operation through a pothole and the same items inspected.

5.2-III. DISCUSSION

The test sequence was repeated ten times. The first and last test is with all wheels level. The other eight tests are with each wheel 6 inches higher and 6 inches lower than the other three wheels.

All doors, windows, escape mechanisms, engine and steering operated normally throughout the test. The undercarriage and body indicated no deficiencies. No water leakage was observed during the test. The results of this test are indicated on the following data forms.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	■ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies..
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	■ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	■ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	■ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	■ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	■ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	■ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiantcies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	■ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	■ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	■ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

5.2 STRUCTURAL DISTORTION TEST



RIGHT FRONT WHEEL SIX INCHES HIGHER



RIGHT REAR WHEEL SIX INCHES LOWER

5.3 STRUCTURAL STRENGTH AND DISTORTION TESTS - STATIC TOWING TEST

5.3-I. TEST OBJECTIVE

The objective of this test is to determine the characteristics of the bus towing mechanisms under static loading conditions.

5.3-II. TEST DESCRIPTION

Utilizing a load-distributing yoke, a hydraulic cylinder is used to apply a static tension load equal to 1.2 times the bus curb weight. The load will be applied to both the front and rear, if applicable, towing fixtures at an angle of 20 degrees with the longitudinal axis of the bus, first to one side then the other in the horizontal plane, and then upward and downward in the vertical plane. Any permanent deformation or damage to the tow eyes or adjoining structure will be recorded.

5.3-III. DISCUSSION

The load-distributing yoke was incorporated as the interface between the Static Tow apparatus and the test bus tow hook/eyes. The test was performed to the full target test weight of 21,792 lbs (1.2 x 18,160 lbs CW). No damage or deformation was observed during all four pulls of the test.

STATIC TOWING TEST DATA FORM

Bus Number: 1606	Date: 02-14-17
Personnel: T.S. & E.L.	Temperature (°F): 35

Inspect right front tow eye and adjoining structure.
Comments: No damage or deformation observed.
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: Bolts torqued.
Inspect left front tow eye and adjoining structure.
Comments: No damage or deformation observed.
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: Bolts torqued.
Inspect right rear tow eye and adjoining structure.
Comments: N/A
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: N/A
Inspect left rear tow eye and adjoining structure.
Comments: N/A
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: N/A
General comments of any other structure deformation or failure: The front bumper had to be removed for the test so it did not get damaged. All four pulls were performed to the target test load of 21,792 lbs.(18,160 lbs. CW x 1.2) with no damage or deformation observed. The manufacturer does not recommend towing from the rear. Therefore, a rear tow was not performed.

5.3 STATIC TOWING TEST



FRONT 20° UPWARD PULL



FRONT 20° DOWNWARD PULL

5.3 STATIC TOWING TEST CONT.



FRONT 20° LEFT PULL



FRONT 20° RIGHT PULL

5.4 STRUCTURAL STRENGTH AND DISTORTION TESTS - DYNAMIC TOWING TEST

5.4-I. TEST OBJECTIVE

The objective of this test is to verify the integrity of the towing fixtures and determine the feasibility of towing the bus under manufacturer specified procedures.

5.4-II. TEST DESCRIPTION

This test requires the bus be towed at curb weight using the specified equipment and instructions provided by the manufacturer and a heavy-duty wrecker. The bus will be towed for 5 miles at a speed of 20 mph for each recommended towing configuration. After releasing the bus from the wrecker, the bus will be visually inspected for any structural damage or permanent deformation. All doors, windows and passenger escape mechanisms will be inspected for proper operation.

5.4-III. DISCUSSION

The bus was towed using a heavy-duty wrecker. The towing interface was accomplished by incorporating a hydraulic under lift. A front lift tow was performed. Rear towing is not recommended. No problems, deformation, or damage was noted during testing.

DYNAMIC TOWING TEST DATA FORM

Bus Number: 1606	Date: 02-15-17
Personnel: T.S., S.R. & E.L.	

Temperature (°F): 39	
Wind Direction: NNW	Wind Speed (mph): 9

Inspect tow equipment-bus interface.
Comments: A safe and adequate connection was made between the tow equipment and the bus.
Inspect tow equipment-wrecker interface.
Comments: A safe and adequate connection was made between the tow equipment and the wrecker.
Towing Comments: A front lift tow was performed incorporating a hydraulic under lift wrecker.
Description and location of any structural damage: None noted.
General Comments: None other noted.

5.4 DYNAMIC TOWING TEST



TOWING INTERFACE



TEST BUS IN TOW

5.5 STRUCTURAL STRENGTH AND DISTORTION TESTS – JACKING TEST

5.5-I. TEST OBJECTIVE

The objective of this test is to inspect for damage due to the deflated tire, and determine the feasibility of jacking the bus with a portable hydraulic jack to a height sufficient to replace a deflated tire.

5.5-II. TEST DESCRIPTION

With the bus at curb weight, the tire(s) at one corner of the bus are replaced with deflated tire(s) of the appropriate type. A portable hydraulic floor jack is then positioned in a manner and location specified by the manufacturer and used to raise the bus to a height sufficient to provide 3-in clearance between the floor and an inflated tire. The deflated tire(s) are replaced with the original tire(s) and the jack is lowered. Any structural damage or permanent deformation is recorded on the test data sheet. This procedure is repeated for each corner of the bus.

5.5-III. DISCUSSION

The jack used for this test has a minimum height of 8.75 inches. During the deflated portion of the test, the jacking point clearances ranged from 5.5 inches to 20.5 inches. No deformation or damage was observed during testing. A complete listing of jacking point clearances is provided in the Jacking Test Data Form.

JACKING CLEARANCE SUMMARY

Condition	Frame Point Clearance
Front axle – one tire flat	10.0”
Rear axle – one tire flat	19.9”
Rear axle – two tires flat	17.0”

JACKING TEST DATA FORM

Bus Number: 1606	Date: 3-16-16
Personnel: S.R. & E.D.	Temperature (°F): 63

Record any permanent deformation or damage to bus as well as any difficulty encountered during jacking procedure.

Deflated Tire	Jacking Pad Clearance Body/Frame (in)	Jacking Pad Clearance Axle/Suspension (in)	Comments
Right front	14.9 “ I 12.7 “ D	8.7 “ I 6.1 “ D	None noted
Left front	12.1 “ I 10.0 “ D	8.9 “ I 6.2 “ D	None noted
Right rear—outside	21.2 “ I 20.5 “ D	8.0 “ I 7.6 “ D	None noted
Right rear—both	21.2 “ I 17.7 “ D	8.0 “ I 5.6 “ D	None noted
Left rear—outside	20.8 “ I 19.9 “ D	8.0 “ I 7.5 “ D	None noted
Left rear—both	20.8 “ I 17.0 “ D	8.0 “ I 5.5 “ D	None noted
Right middle or tag—outside	N/A	N/A	
Right middle or tag—both	N/A	N/A	
Left middle or tag—outside	N/A	N/A	
Left middle or tag—both	N/A	N/A	

Additional comments of any deformation or difficulty during jacking:

None noted.

5.6 STRUCTURAL STRENGTH AND DISTORTION TESTS - HOISTING TEST

5.6-I. TEST OBJECTIVE

The objective of this test is to determine possible damage or deformation caused by the jack/stands.

5.6-II. TEST DESCRIPTION

With the bus at curb weight, the front end of the bus is raised to a height sufficient to allow manufacturer-specified placement of jack stands under the axles or jacking pads independent of the hoist system. The bus will be checked for stability on the jack stands and for any damage to the jacking pads or bulkheads. The procedure is repeated for the tag axle and rear end of the bus. The procedure is then repeated for the front, tag axle and rear simultaneously.

5.6-III. DISCUSSION

The test was conducted using four posts of a six-post electric lift and standard 19 inch jack stands. The bus was hoisted from the front wheel, rear wheel, and then the front and rear wheels simultaneously and placed on jack stands.

The bus easily accommodated the placement of the vehicle lifts and jack stands and the procedure was performed without any instability noted.

HOISTING TEST DATA FORM

Bus Number: 1606	Date: 3-16-16
Personnel: E.D. & S.R.	Temperature (°F): 63

Comments of any structural damage to the jacking pads or axles while both the front wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the rear wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the tag axle wheels are supported by the jack stands:
N/A
Comments of any structural damage to the jacking pads or axles while both the front and rear wheels are supported by the jack stands:
None noted.
Comments of any problems or interference placing wheel hoists under wheels:
None noted.

5.7 STRUCTURAL DURABILITY TEST

5.7-I. TEST OBJECTIVE

The objective of this test is to perform an accelerated durability test that approximates up to 25 percent of the service life of the vehicle.

5.7-II. TEST DESCRIPTION

The test vehicle is driven a total of 11,250 miles; approximately 8,750 miles on the PSBRTF Durability Test Track and approximately 2,500 miscellaneous other miles. The test will be conducted with the bus operated under three different loading conditions. The first segment will consist of approximately 4,625 miles with the bus operated at GVW. The second segment will consist of approximately 2,000 miles with the bus operated at SLW. The remainder of the test, approximately 4,625 miles, will be conducted with the bus loaded to CW. If GVW exceeds the axle design weights, then the load will be adjusted to the axle design weights and the change will be recorded. All subsystems are run during these tests in their normal operating modes. All recommended manufacturers servicing is to be followed and noted on the vehicle maintainability log. Servicing items accelerated by the durability tests will be compressed by 10:1; all others will be done on a 1:1 mi/mi basis. Unscheduled breakdowns and repairs are recorded on the same log as are any unusual occurrences as noted by the driver. Once a week the test vehicle shall be washed down and thoroughly inspected for any signs of failure.

5.7-III. DISCUSSION

The Structural Durability Test was started on March 29, 2016 and was conducted until January 25, 2017. The first 4,625 miles were performed at a GVW of 24,330 lbs. and completed on September 12, 2016. Note; this test bus is not designed to accommodate standing passengers therefore GVW and SLW are the same load. The next 2,000 mile SLW segment was performed at the same 24,330 lbs and completed on November 4, 2016. The final 4,625 mile segment was performed at a CW of 18,160 lbs and completed on February 7, 2017.

The following mileage summary presents the accumulation of miles during the Structural Durability Test. The driving schedule is included, showing the operating duty cycle. A detailed plan view of the Test Track Facility and Durability Test Track are attached for reference. Also, a durability element profile detail shows all the measurements of the different conditions. Finally, photographs illustrating some of the failures that were encountered during the Structural Durability Test are included.

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
03/28/16 TO 04/03/16	222.00	60.00	282.00
04/04/16 TO 04/10/16	526.00	23.00	549.00
04/11/16 TO 04/17/16	488.00	67.00	555.00
04/18/16 TO 04/24/16	0.00	0.00	0.00
04/25/16 TO 05/01/16	0.00	0.00	0.00
05/02/16 TO 05/08/16	0.00	0.00	0.00
05/09/16 TO 05/15/16	35.00	56.00	91.00
05/16/16 TO 05/22/16	0.00	51.00	51.00
05/23/16 TO 05/29/16	0.00	0.00	0.00
05/30/16 TO 06/05/16	45.00	123.00	168.00
06/06/16 TO 06/12/16	514.00	23.00	537.00
06/13/16 TO 06/19/16	0.00	0.00	0.00
06/20/16 TO 06/26/16	0.00	0.00	0.00
06/27/16 TO 07/03/16	0.00	0.00	0.00

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
07/04/16 TO 07/10/16	0.00	40.00	40.00
07/11/16 TO 07/17/16	499.00	88.00	587.00
07/18/16 TO 07/24/16	0.00	0.00	0.00
07/25/16 TO 07/31/16	0.00	0.00	0.00
08/01/16 TO 08/07/16	542.00	24.00	566.00
08/08/16 TO 08/14/16	490.00	23.00	513.00
08/15/16 TO 08/21/16	42.00	53.00	95.00
08/22/16 TO 08/28/16	0.00	0.00	0.00
08/29/16 TO 09/04/16	0.00	0.00	0.00
09/05/16 TO 09/11/16	145.00	75.00	220.00
09/12/16 TO 09/18/16	357.00	74.00	431.00
09/19/16 TO 09/25/16	597.00	77.00	674.00
09/26/16 TO 10/02/16	264.00	306.00	570.00
10/03/16 TO 10/09/16	0.00	0.00	0.00

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
10/10/16 TO 10/16/16	0.00	0.00	0.00
10/17/16 TO 10/23/16	0.00	0.00	0.00
10/24/16 TO 10/30/16	295.00	87.00	382.00
10/31/16 TO 11/06/16	114.00	63.00	177.00
11/07/16 TO 11/13/16	1114.00	52.00	1166.00
11/14/16 TO 11/20/16	991.00	238.00	1229.00
11/21/16 TO 11/27/16	103.00	5.00	108.00
11/28/16 TO 12/04/16	612.00	223.00	835.00
12/05/16 TO 12/11/16	35.00	2.00	37.00
12/12/16 TO 12/18/16	720.00	34.00	754.00
12/19/16 TO 12/25/16	0.00	47.00	47.00
12/26/16 TO 01/01/17	0.00	0.00	0.00
01/02/17 TO 01/08/17	0.00	0.00	0.00
01/09/17 01/15/17	0.00	284.00	284.00

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
01/16/17 TO 01/22/17	0.00	101.00	101.00
01/23/17 TO 01/29/17	0.00	120.00	120.00
01/30/17 02/05/17	0.00	80.00	80.00
02/06/17 TO 02/12/17	0.00	47.00	47.00
TOTAL	8750.00	2546.00	11296.00

Table 4. Driving Schedule for Bus Operation on the Durability Test Track.

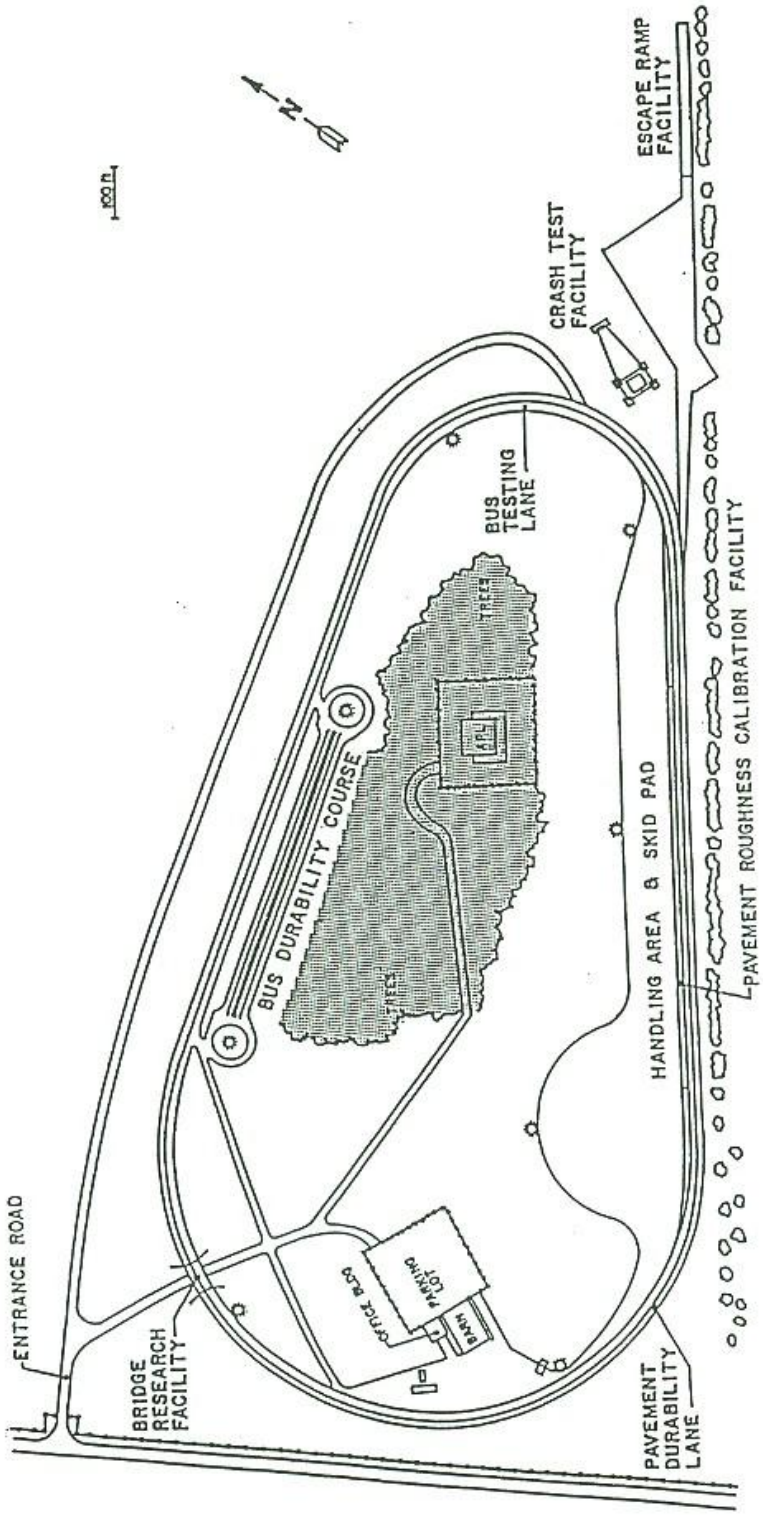
STANDARD OPERATING SCHEDULE

Monday through Friday

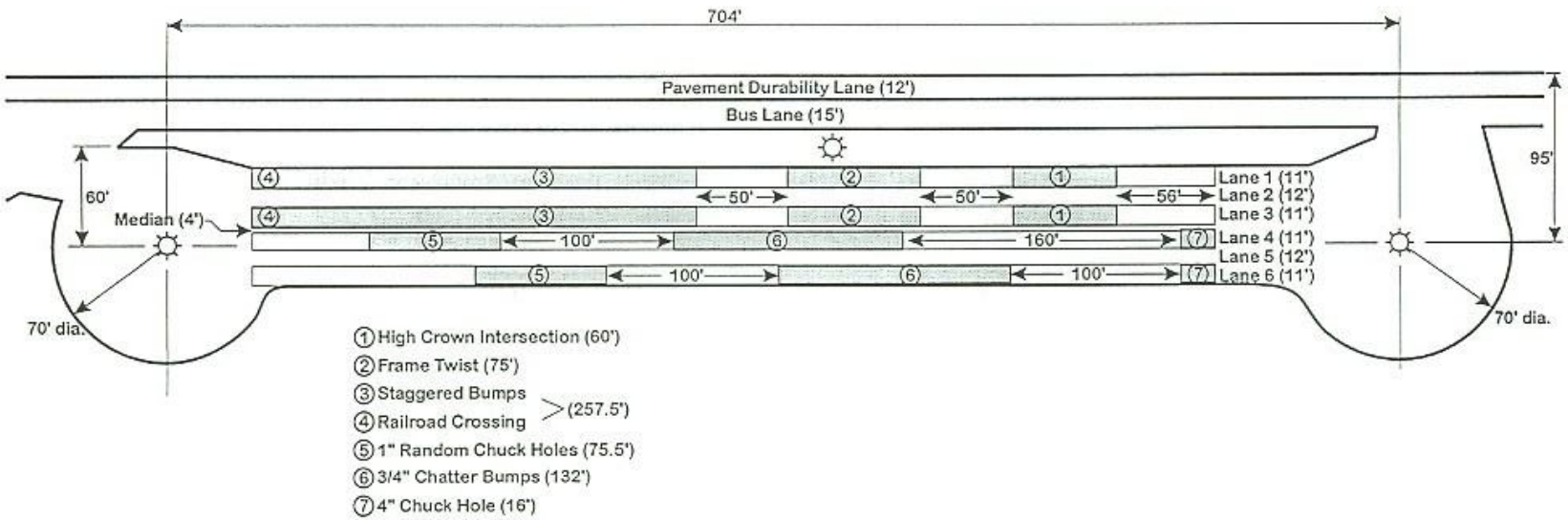
	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 3	4:00 pm	D
	5:40 pm	C
	5:50 pm	B
	6:00 pm	D
	7:40 pm	C
	7:50 pm	B
	8:05 pm	D
	9:40 pm	C
	9:50 pm	B
	10:00 pm	D
	11:40 pm	C
	11:50 pm	F

B---Break
C----Cycle all systems five times, visual inspection, driver's log entries
D----Drive bus as specified by procedure
F----Fuel bus, complete driver's log shift entries

"PLAN VIEW OF PENN STATE BUS TESTING AND RESEARCH FACILITY"



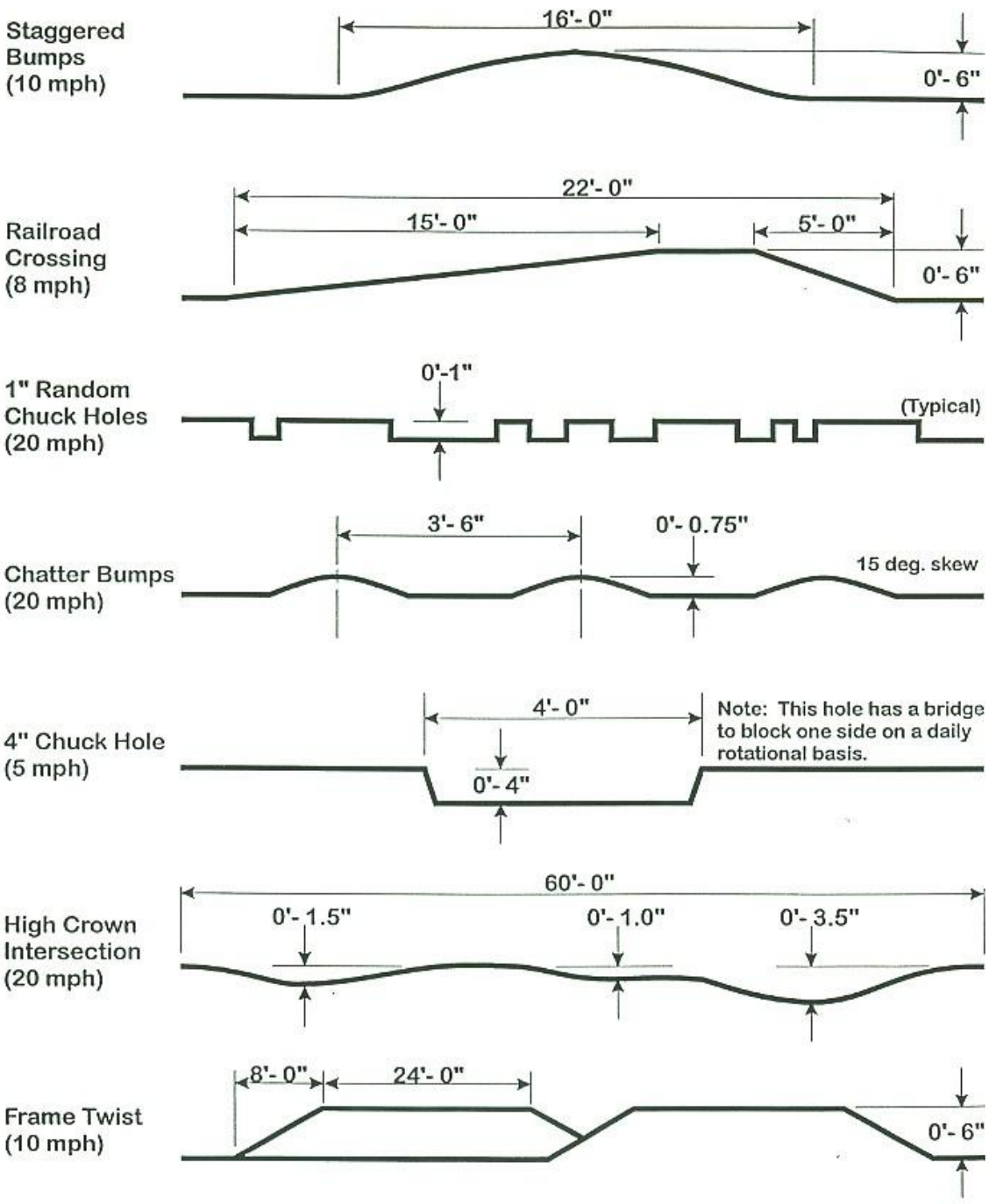
BUS TESTING AND RESEARCH TEST TRACK
UNIVERSITY PARK, PA



Plan View

Vehicle Durability Test Track

The Pennsylvania Transportation Institute
Penn State



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

(Page 1 of 2)
UNSCHEDULED MAINTENANCE
GLAVAL BUS #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
04-07-16	638	Trouble shoot intermittent "Check Engine" light.	Trouble shooting found code P067C (cylinder 5 glow plug circuit low). "Check Engine" light is currently out.	2.00	464.00
06-01-16	1,528	Clamp on coolant line positioned incorrectly causing it to rub through the A/C condenser line.	A/C condenser line repaired and coolant clamp positioned properly.	16.00	240.00
07-08-16	2,273	Rear bumper step has broken off.	Welded/repaired rear bumper step.	3.00	12.00
08-03-16	2,860	The fuel tank is leaking at the bottom, forward side.	Fuel tank replaced.	6.00	320.00
08-03-16	2,860	Manufacturer request a modified lower radiator hose be installed.	2" x 4" lower radiator hose modification installed.	3.00	3.00
09-12-16	4,160	The "Check Engine" light is on. Engine shuts down.	Scan OBD system for codes. Collected codes and informed manufacturer.	2.00	72.00
09-28-16	5,782	The front sway bar is broken at the right side.	Front sway bar replaced.	2.00	16.00
09-29-16	5,878	Inspect for noise & sparks coming from the engine compartment.	Troubleshooting found the A/C clutch on the O.E.M. compressor broken. New compressor ordered.	2.00	2.00

(Page 2 of 2)
UNSCHEDULED MAINTENANCE
GLAVAL BUS #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
10-10-16	5,929	The air conditioning compressor is seized up.	Remove and replaced failed A/C compressor. Evacuate system and charge with Freon.	8.00	288.00
11-09-16	7,002	The exhaust has 3 broken hangers.	3 broken hangers replaced.	2.00	2.00
12-17-16	9,863	Rear bumper step has broken off.	Welded/repaired rear bumper step.	1.00	4.00
12-12-16	9,863	The lower radiator hose wore through from contact with the A/C compressor.	Coolant drained, lower radiator hose replaced, refilled coolant.	4.00	16.00
12-15-16	10,411	Both engine hood hinges are broken.	Hinges welded/repaired.	2.00	2.00
12-21-16	10,644	The left rear shock is leaking oil.	Both rear shocks replaced.	4.00	6.00
12-21-16	10,644	The front sway bar is cracked.	Front sway bar replaced.	2.00	6.00



CLAMP RUBBING THROUGH A/C CONDENSOR
(1,528 TEST MILES)



REAR BUMPER STEP BROKEN OFF
(2,273 TEST MILES)



LEAKING FUEL TANK
(2,860 TEST MILES)



RADIATOR HOSE MODIFIED WITH P-CLIP
(2,860 TEST MILES)



BROKEN FRONT SWAY BAR
(5,782 TEST MILES)



BROKEN CLUTCH ON A/C COMPRESSOR
(5,878 TEST MILES)

UNSCHEDULED MAINTENANCE CONT.



LOWER RADIATOR HOSE WORE THROUGH DUE TO CONTACT WITH A/C COMPRESSOR (9,863 TEST MILES)



BOTH REAR SHOCKS REPLACED (10,664 TEST MILES)

6. FUEL ECONOMY TEST - A FUEL CONSUMPTION TEST USING AN APPROPRIATE OPERATING CYCLE

6-I. TEST OBJECTIVE

The objective of this test is to provide accurate comparable fuel consumption data on transit buses produced by different manufacturers. This fuel economy test bears no relation to the calculations done by the Environmental Protection Agency (EPA) to determine levels for the Corporate Average Fuel Economy Program. EPA's calculations are based on tests conducted under laboratory conditions intended to simulate city and highway driving. This fuel economy test, as designated here, is a measurement of the fuel expended by a vehicle traveling a specified test loop under specified operating conditions. The results of this test will not represent actual mileage but will provide data that can be used by recipients to compare buses tested by this procedure.

6-II. TEST DESCRIPTION

This test requires operation of the bus over a course based on the Transit Coach Operating Duty Cycle (ADB Cycle) at seated load weight using a procedure based on the Fuel Economy Measurement Test (Engineering Type) For Trucks and Buses: SAE 1376 July 82. The procedure has been modified by elimination of the control vehicle and by modifications as described below. The inherent uncertainty and expense of utilizing a control vehicle over the operating life of the facility is impractical.

The fuel economy test will be performed as soon as possible (weather permitting) after the completion of the GVW portion of the structural durability test. It will be conducted on the bus test lane at the Penn State Test Facility. Signs are erected at carefully measured points which delineate the test course. A test run will comprise 3 CBD phases, 2 Arterial phases, and 1 Commuter phase. An electronic fuel measuring system will indicate the amount of fuel consumed during each phase of the test. The test runs will be repeated until there are at least two runs in both the clockwise and counterclockwise directions in which the fuel consumed for each run is within ± 4 percent of the average total fuel used over the 4 runs. A 20-minute idle consumption test is performed just prior to and immediately after the driven portion of the fuel economy test. The amount of fuel consumed while operating at normal/low idle is recorded on the Fuel Economy Data Form. This set of four valid runs along with idle consumption data comprise a valid test.

The test procedure is the ADB cycle with the following four modifications:

1. The ADB cycle is structured as a set number of miles in a fixed time in the following order: CBD, Arterial, CBD, Arterial, CBD, and Commuter. A separate idle fuel consumption measurement is performed at the beginning and end of the fuel economy test. This phase sequence permits the reporting of fuel consumption for each of these phases separately, making the data more useful to bus manufacturers and transit properties.

2. The operating profile for testing purposes shall consist of simulated transit type service at seated load weight. The three test phases (figure 6-1) are: a central business district (CBD) phase of 2 miles with 7 stops per mile and a top speed of 20 mph; an arterial phase of 2 miles with 2 stops per mile and a top speed of 40 mph; and a commuter phase of 4 miles with 1 stop and a maximum speed of 40 mph. At each designated stop the bus will remain stationary for seven seconds. During this time, the passenger doors shall be opened and closed.

3. The individual ADB phases remain unaltered with the exception that 1 mile has been changed to 1 lap on the Penn State Test Track. One lap is equal to 5,042 feet. This change is accommodated by adjusting the cruise distance and time.

4. The acceleration profile, for practical purposes and to achieve better repeatability, has been changed to "full throttle acceleration to cruise speed".

Several changes were made to the Fuel Economy Measurement Test (Engineering Type) For Trucks and Buses: SAE 1376 July 82:

1. Sections 1.1, and 1.2 only apply to diesel, gasoline, methanol, and any other fuel in the liquid state (excluding cryogenic fuels).

1.1 SAE 1376 July 82 requires the use of at least a 16-gal fuel tank. Such a fuel tank when full would weigh approximately 160 lb. It is judged that a 12-gal tank weighing approximately 120 lb will be sufficient for this test and much easier for the technician and test personnel to handle.

1.2 SAE 1376 July 82 mentions the use of a mechanical scale or a flowmeter system. This test procedure uses a load cell readout combination that provides an accuracy of 0.5 percent in weight and permits on-board weighing of the gravimetric tanks at the end of each phase. This modification permits the determination of a fuel economy value for each phase as well as the overall cycle.

2. Section 2.1 applies to compressed natural gas (CNG), liquefied natural gas (LNG), cryogenic fuels, and other fuels in the vapor state.

2.1 A laminar type flowmeter will be used to determine the fuel consumption. The pressure and temperature across the flow element will be monitored by the flow computer. The flow computer will use this data to calculate the gas flow rate. The flow computer will also display the flow rate (scfm) as well as the total fuel used (scf). The total fuel used (scf) for each phase will be recorded on the Fuel Economy Data Form.

3. Use both Sections 1 and 2 for dual fuel systems.

FUEL ECONOMY CALCULATION PROCEDURE

A. For diesel, gasoline, methanol and fuels in the liquid state.

The reported fuel economy is based on the following: measured test quantities--distance traveled (miles) and fuel consumed (pounds); standard reference values--density of water at 60EF (8.3373 lbs/gal) and volumetric heating value of standard fuel; and test fuel specific gravity (unitless) and volumetric heating value (BTU/gal). These combine to give a fuel economy in miles per gallon (mpg) which is corrected to a standard gallon of fuel referenced to water at 60EF. This eliminates fluctuations in fuel economy due to fluctuations in fuel quality. This calculation has been programmed into a computer and the data processing is performed automatically.

The fuel economy correction consists of three steps:

1.) Divide the number of miles of the phase by the number of pounds of fuel consumed

phase	miles per phase	total miles per run
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$FEo_{mi/lb}$ = Observed fuel economy = $\frac{\text{miles}}{\text{lb of fuel}}$

2.) Convert the observed fuel economy to miles per gallon [mpg] by multiplying by the specific gravity of the test fuel Gs (referred to water) at 60°F and multiply by the density of water at 60°F

$$\mathbf{FEo_{mpg}} = \mathbf{FEc_{mi/lb}} \times Gs \times Gw$$

where **Gs** = Specific gravity of test fuel at 60°F (referred to water)
Gw = 8.3373 lb/gal

3.) Correct to a standard gallon of fuel by dividing by the volumetric heating value of the test fuel (H) and multiplying by the volumetric heating value of standard reference fuel (Q). Both heating values must have the same units.

$$\mathbf{FEc} = \mathbf{FEo_{mpg}} \times \frac{Q}{H}$$

where

H = Volumetric heating value of test fuel [BTU/gal]
Q = Volumetric heating value of standard reference fuel

Combining steps 1-3 yields

$$\Rightarrow FEc = \frac{miles}{lbs} \times (Gs \times Gw) \times \frac{Q}{H}$$

4.) Covert the fuel economy from mpg to an energy equivalent of miles per BTU. Since the number would be extremely small in magnitude, the energy equivalent will be represented as miles/BTUx10^6.

Eq = Energy equivalent of converting mpg to mile/BTUx10^6.

$Eq = ((mpg)/(H))x10^6$

B. CNG, LNG, cryogenic and other fuels in the vapor state.

The reported fuel economy is based on the following: measured test quantities--distance traveled (miles) and fuel consumed (scf); density of test fuel, and volumetric heating value (BTU/lb) of test fuel at standard conditions (P=14.73 psia and T=60°F). These combine to give a fuel economy in miles per lb. The energy equivalent (mile/BTUx10^6) will also be provided so that the results can be compared to buses that use other fuels.

1.) Divide the number of miles of the phase by the number of standard cubic feet (scf) of fuel consumed.

phase	miles per phase	total miles per run
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$FEo_{mi/scf}$ = Observed fuel economy = $\frac{\text{miles}}{\text{scf of fuel}}$

2.) Convert the observed fuel economy to miles per lb by dividing FEo by the density of the test fuel at standard conditions (Lb/ft^3).

Note: The density of test fuel must be determined at standard conditions as described above. If the density is not defined at the above standard conditions, then a correction will be needed before the fuel economy can be calculated.

$$FEo_{mi/lb} = FEo / Gm$$

where Gm = Density of test fuel at standard conditions

3.) Convert the observed fuel economy (FEomi/lb) to an energy equivalent of (miles/BTUx10^6) by dividing the observed fuel economy (FEomi/lb) by the heating value of the test fuel at standard conditions.

$$Eq = ((FEomi/lb)/H)x10^6$$

where

Eq = Energy equivalent of miles/lb to mile/BTUx10^6
H = Volumetric heating value of test fuel at standard conditions

6-III. DISCUSSION

This is a comparative test of fuel economy using diesel fuel with a heating value of 19568.0 btu/lb. The driving cycle consists of Central Business District (CBD), Arterial (ART), and Commuter (COM) phases as described in 6-II. The fuel consumption for each driving cycle and for idle is measured separately. The results are corrected to a reference fuel with a volumetric heating value of 126,700.0 btu/gal.

An extensive pretest maintenance check is made including the replacement of all lubrication fluids. The details of the pretest maintenance are given in the first three Pretest Maintenance Forms. The fourth sheet shows the Pretest Inspection. The next four Fuel Economy Forms provide the data from the four test runs. Finally, the summary sheet provides the average fuel consumption. The overall average is based on total fuel and total mileage for each phase. The overall average fuel consumption values were; CBD – 4.84 mpg, ART – 5.16 mpg, and COM – 9.37 mpg. Average fuel consumption at idle was 0.39 gph.

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1606	Date: 01-06-17	SLW (lbs): 24,340
Personnel: P.D.,E.L.& S.R.		

FUEL SYSTEM	OK
Install fuel measurement system	✓
Replace fuel filter	✓
Check for fuel leaks	✓
Specify fuel type (refer to fuel analysis)	Diesel
Remarks: None noted.	
BRAKES/TIRES	OK
Inspect hoses	✓
Inspect brakes	✓
Relube wheel bearings	✓
Check tire inflation pressures (mfg. specs.)	✓
Check tire wear (less than 50%)	✓
Remarks: None noted.	
COOLING SYSTEM	OK
Check hoses and connections	✓
Check system for coolant leaks	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1606	Date: 01-06-17
Personnel: P.D., E.L. & S.R.	

ELECTRICAL SYSTEMS	OK
Check battery	✓
Inspect wiring	✓
Inspect terminals	✓
Check lighting	✓
Remarks: None noted.	

DRIVE SYSTEM	OK
Drain transmission fluid	✓
Replace filter/gasket	✓
Check hoses and connections	✓
Replace transmission fluid	✓
Check for fluid leaks	✓
Remarks: None noted.	

LUBRICATION	OK
Drain crankcase oil	✓
Replace filters	✓
Replace crankcase oil	✓
Check for oil leaks	✓
Check oil level	✓
Lube all chassis grease fittings	✓
Lube universal joints	✓
Replace differential lube including axles (Done by manufacturer)	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1606	Date: 01-06-17
Personnel: P.D.,E.L. & S.R.	

EXHAUST/EMISSION SYSTEM	OK
Check for exhaust leaks	✓
Remarks: None noted.	

ENGINE	OK
Replace air filter	✓
Inspect air compressor and air system	✓
Inspect vacuum system, if applicable	✓
Check and adjust all drive belts	✓
Check cold start assist, if applicable N/A	✓
Remarks: None noted.	

STEERING SYSTEM	OK
Check power steering hoses and connectors	✓
Service fluid level	✓
Check power steering operation	✓
Remarks: None noted.	

	OK
Ballast bus to seated load weight	✓

TEST DRIVE	OK
Check brake operation	✓
Check transmission operation	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST INSPECTION FORM

Bus Number: 1606	Date: 01-25-17
Personnel: S.R.,E.L.,E.D. & S.B.	

PRE WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	S.R.
Cold tire pressure (psi): Front 120 Middle N/A Rear 120	S.R./S.B.
Engine oil level	S.R./S.B.
Engine coolant level	S.R./S.B.
Interior and exterior lights on, evaporator fan on	S.R.
Fuel economy instrumentation installed and working properly.	S.R.
Fuel line -- no leaks or kinks	S.R.
Speed measuring system installed on bus. Speed indicator installed in front of bus and accessible to TECH and Driver.	S.R.
Bus is loaded to SLW	S.R.
WARM-UP	**If OK, Initial**
Bus driven for at least one hour warm-up	S.R./S.B.
No extensive or black smoke from exhaust	S.R./S.B.
POST WARM-UP	**If OK, Initial**
Warm tire pressure (psi): Front 125 Middle N/A Rear 125	S.R.
Environmental conditions Average wind speed <12 mph and maximum gusts <15 mph Ambient temperature between 30°F(-1C°) and 90°F(32°C) Track surface is dry Track is free of extraneous material and clear of interfering traffic	S.R.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 1	Personnel: S.R.,T.S.,E.L. & S.B.	
Test Direction: □CW or ■CCW	Temperature (°F): 39	Humidity (%): 72
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 10 W	Barometric Pressure (in.Hg): 29.80

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:30	8:30	17.1	0	.357	.357
ART #1	0	4:07	4:07	19.7	0	.338	.338
CBD #2	0	8:31	8:31	21.9	0	.357	.357
ART #2	0	4:04	4:04	25.0	0	.338	.338
CBD #3	0	8:30	8:30	24.4	0	.363	.363
COMMUTER	0	6:02	6:02	28.3	0	.378	.378
						Total Fuel =	2.131 gals

20 minute idle : Total Fuel Used = .126 gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 2	Personnel: S.R.,T.S.,E.L. & S.B.	
Test Direction: ■CW or □CCW	Temperature (°F): 41	Humidity (%): 71
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 10 W	Barometric Pressure (in.Hg): 29.70

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:30	8:30	25.7	0	.357	.357
ART #1	0	4:04	4:04	26.9	0	.333	.333
CBD #2	0	8:27	8:27	28.2	0	.361	.361
ART #2	0	4:04	4:04	29.7	0	.340	.340
CBD #3	0	8:25	8:25	29.7	0	.363	.363
COMMUTER	0	6:02	6:02	30.8	0	.369	.369
						Total Fuel =	2.123 gals

20 minute idle : Total Fuel Used = N/A gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 3	Personnel: S.R.,E.L.,E.D. & S.B.	
Test Direction: □CW or ■CCW	Temperature (°F): 42	Humidity (%): 66
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 9 W	Barometric Pressure (in.Hg): 29.70

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:20	8:20	21.8	0	.343	.343
ART #1	0	4:08	4:08	24.9	0	.333	.333
CBD #2	0	8:34	8:34	27.1	0	.359	.359
ART #2	0	4:03	4:03	28.4	0	.334	.334
CBD #3	0	8:33	8:33	28.4	0	.356	.356
COMMUTER	0	6:04	6:04	28.1	0	.368	.368
						Total Fuel =	2.093 gals

20 minute idle : Total Fuel Used = N/A gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Page 4 of 4

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 4	Personnel: S.R.,E.L.,E.D. & S.B.	
Test Direction: ■CW or □CCW	Temperature (°F): 42	Humidity (%): 66
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 10 W	Barometric Pressure (in.Hg): 29.70

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:34	8:34	26.9	0	.351	.351
ART #1	0	4:07	4:07	29.9	0	.327	.327
CBD #2	0	8:34	8:34	30.2	0	.356	.356
ART #2	0	4:05	4:05	29.3	0	.334	.334
CBD #3	0	8:32	8:32	31.1	0	.358	.358
COMMUTER	0	6:01	6:01	32.5	0	.359	.359
						Total Fuel =	2.085 gals

20 minute idle : Total Fuel Used = .109 gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY SUMMARY SHEET

BUS MANUFACTURER: Glaval BUS NUMBER: 1606
BUS MODEL : Concorde II TEST DATE : 01/25/17

FUEL TYPE : DIESEL
SP. GRAVITY : .8505
HEATING VALUE : 19568.00 BTU/Lb
FUEL TEMPERATURE : 80.00 deg F
Standard Conditions: 60 deg F and 14.7 psi
Density of Water : 8.3373 lb/gallon at 60 deg F

CYCLE	TOTAL FUEL USED(GAL)	TOTAL MILES	FUEL ECONOMY MPG(Measured)	FUEL ECONOMY MPG (Corrected)
Run # 1, CCW				
CBD	1.077	5.73	5.320	4.81
ART	.676	3.82	5.651	5.11
COM	.378	3.82	10.106	9.14
TOTAL	2.131	13.37	6.274	5.67
Run # 2, CW				
CBD	1.081	5.73	5.301	4.79
ART	.673	3.82	5.676	5.13
COM	.369	3.82	10.352	9.36
TOTAL	2.123	13.37	6.298	5.69
Run # 3, CCW				
CBD	1.058	5.73	5.416	4.90
ART	.667	3.82	5.727	5.18
COM	.368	3.82	10.380	9.38
TOTAL	2.093	13.37	6.388	5.77
Run # 4, CW				
CBD	1.065	5.73	5.380	4.86
ART	.661	3.82	5.779	5.22
COM	.359	3.82	10.641	9.62
TOTAL	2.085	13.37	6.412	5.80

IDLE CONSUMPTION (MEASURED)

First 20 Minutes Data: .13GAL Last 20 Minutes Data: .11GAL
Average Idle Consumption: .35GAL/Hr

RUN CONSISTENCY: % Difference from overall average of total fuel used

Run 1: -1.1 Run 2: -.7 Run 3: .7 Run 4: 1.1

SUMMARY (CORRECTED VALUES)

Average Idle Consumption : .39 G/Hr
Average CBD Phase Consumption : 4.84 MPG
Average Arterial Phase Consumption: 5.16 MPG
Average Commuter Phase Consumption: 9.37 MPG
Overall Average Fuel Consumption : 5.73 MPG
Overall Average Fuel Consumption : 41.33 Miles/ Million BTU

7. NOISE

7.1 INTERIOR NOISE AND VIBRATION TESTS

7.1-I. TEST OBJECTIVE

The objective of these tests is to measure and record interior noise levels and check for audible vibration under various operating conditions.

7.1-II. TEST DESCRIPTION

During this series of tests, the interior noise level will be measured at several locations with the bus operating under the following three conditions:

1. With the bus stationary, a white noise generating system shall provide a uniform sound pressure level equal to 80 dB(A) on the left, exterior side of the bus. The engine and all accessories will be switched off and all openings including doors and windows will be closed. This test will be performed at the Test Track Facility.

2. The bus accelerating at full throttle from a standing start to 35 mph on a level pavement. All openings will be closed and all accessories will be operating during the test. This test will be performed on the track at the Test Track Facility.

3. The bus will be operated at various speeds from 0 to 55 mph with and without the air conditioning and accessories on. Any audible vibration or rattles will be noted. This test will be performed on the test segment between the Test Track and the Bus Testing Center.

All tests will be performed in an area free from extraneous sound-making sources or reflecting surfaces. The ambient sound level as well as the surrounding weather conditions will be recorded in the test data.

7.1-III. DISCUSSION

This test is performed in three parts. The first part exposes the exterior of the vehicle to 80.0 dB(A) on the left side of the bus and the noise transmitted to the interior is measured. The overall average of the six measurements was 43.3 dB(A); ranging from 41.6 dB(A) in line with the front speaker to 45.1 dB(A) in line with the rear speaker. The interior ambient noise level for this test was < 30.0 dB(A).

The second test measures interior noise during acceleration from 0 to 35 mph. This noise level ranged from 66.4 dB(A) at the middle passenger seats to 68.7 dB(A) at the front passenger seats. The overall average was 67.7 dB(A). The interior ambient noise level for this test was < 30.0 dB(A).

The third part of the test is to listen for resonant vibrations, rattles, and other noise sources while operating over the road. No vibrations or rattles were noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 1: 80 dB(A) Stationary White Noise

Bus Number: 1606	Date: 02-06-17
Personnel: S.R., T.S. & E.D.	
Temperature (°F): 38	Humidity (%): 64
Wind Speed (mph): 6	Wind Direction: SW
Barometric Pressure (in.Hg): 30.20	
Initial Sound Level Meter Calibration: 93.6 dB(A) Checked By: T.S.	
Interior Ambient Noise Level dB(A): < 30.0	Exterior Ambient Noise Level dB(A): 35.1
Microphone Height During Testing (in): 45.5	
Initial Reading at Bus: 80.6 dB(A)	Final Reading at Bus: 80.5 dB(A)

Reading Location	Measured Sound Level dB(A)
Driver's Seat	41.9
Front Passenger Seats	43.9
In Line with Front Speaker	41.6
In Line with Middle Speaker	43.7
In Line with Rear Speaker	45.1
Rear Passenger Seats	43.7

Final Sound Level Meter Calibration: 93.7 dB(A) Checked By: T.S.

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 32	Humidity (%): 85
Wind Speed (mph): 2	Wind Direction: N
Barometric Pressure (in.Hg): 30.2	
Initial Sound Level Meter Calibration: 93.7 dB(A)	
Interior Ambient Noise Level dB(A): < 30.0	Exterior Ambient Noise Level dB(A): 43.5
Microphone Height During Testing (in): 47.2	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	67.2
Front Passenger Seats	68.7
Middle Passenger Seats	66.4
Rear Passenger Seats	68.5

Final Sound Level Meter Calibration: 93.7 dB(A)

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test

Bus Number: 1606	Date: 01-13-17
Personnel: T.S., E.D. & M.R.	
Temperature (°F): 39	

Describe the following possible sources of noise and give the relative location on the bus.

Source of Noise	Location	Description of Noise
Engine and Accessories	None	N/A
Windows and Doors	None	N/A
Seats and Wheel Chair lifts	None	N/A
Other	None	N/A

Comment on any other vibration or noise source which may have occurred
that is not described above: None noted.
Comments: None noted.

7.1 INTERIOR NOISE TEST



TEST BUS SET-UP FOR 80 dB(A)
INTERIOR NOISE TEST

7.2 EXTERIOR NOISE TESTS

7.2-I. TEST OBJECTIVE

The objective of this test is to record exterior noise levels when a bus is operated under various conditions.

7.2-II. TEST DESCRIPTION

In the exterior noise tests, the bus will be operated at a SLW in three different conditions using a smooth, straight and level roadway:

1. Accelerating at full throttle from a constant speed at or below 35 mph and just prior to transmission up shift.
2. Accelerating at full throttle from standstill.
3. Stationary, with the engine at low idle, high idle, and wide open throttle.

In addition, the buses will be tested with and without the air conditioning and all accessories operating. The exterior noise levels will be recorded.

The test site is at the PSBRTF and the test procedures will be in accordance with SAE Standards SAE J366b, Exterior Sound Level for Heavy Trucks and Buses. The test site is an open space free of large reflecting surfaces. A noise meter placed at a specified location outside the bus will measure the noise level.

During the test, special attention should be paid to:

1. The test site characteristics regarding parked vehicles, signboards, buildings, or other sound-reflecting surfaces
2. Proper usage of all test equipment including set-up and calibration
3. The ambient sound level

7.2-III. DISCUSSION

The Exterior Noise Test determines the noise level generated by the vehicle under different driving conditions and at stationary low and high idle, with and without air conditioning and accessories operating. The test site is a large, level, bituminous paved area with no reflecting surfaces nearby.

With an exterior ambient noise level of 40.5 dB(A), the average test result obtained while accelerating from a constant speed was 69.8 dB(A) on the right side and 70.1 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 41.4 dB(A), the average of the results obtained were 69.9 dB(A) on the right side and 70.0 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 48.8 dB(A) at low idle and 69.2 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 0.4 dB(A) lower at low idle and 0.1 dB(A) higher at wide open throttle. The exterior ambient noise level measured during this test was 41.9 dB(A). Note; this test bus is not equipped with a fast idle mode.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Constant Speed

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 32	Humidity (%): 86
Wind Speed (mph): 1	Wind Direction: N
Barometric Pressure (in.Hg): 30.20	

Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■

Initial Sound Level Meter Calibration: 93.7 dB(A)

Exterior Ambient Noise Level: 40.5 dB(A)

Accelerating from Constant Speed Curb (Right) Side		Accelerating from Constant Speed Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	68.0	1	70.3
2	68.8	2	69.0
3	69.9	3	69.9
4	69.7	4	69.1
5	69.1	5	69.8
6	N/A	6	N/A
7	N/A	7	N/A
8	N/A	8	N/A
9	N/A	9	N/A
10	N/A	10	N/A
Average of two highest actual noise levels = 69.8 dB(A)		Average of two highest actual noise levels = 70.1 dB(A)	

Final Sound Level Meter Calibration Check: 93.7 dB(A)

Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Standstill

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 32	Humidity (%): 86
Wind Speed (mph): Calm	Wind Direction: N
Barometric Pressure (in.Hg): 30.20	

Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■

Initial Sound Level Meter Calibration: 93.7 dB(A)

Exterior Ambient Noise Level: 41.4 dB(A)

Accelerating from Standstill Curb (Right) Side		Accelerating from Standstill Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	68.7	1	69.6
2	70.2	2	70.0
3	69.3	3	70.0
4	69.1	4	69.7
5	69.5	5	69.9
6	N/A	6	N/A
7	N/A	7	N/A
8	N/A	8	N/A
9	N/A	9	N/A
10	N/A	10	N/A
Average of two highest actual noise levels = 69.9 dB(A)		Average of two highest actual noise levels = 70.0 dB(A)	

Final Sound Level Meter Calibration Check: 93.7 dB(A)

Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Stationary

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 33	Humidity (%): 86
Wind Speed (mph): Calm	Wind Direction: Calm
Barometric Pressure (in.Hg): 30.20	
Initial Sound Level Meter Calibration: 93.7 dB(A)	
Exterior Ambient Noise Level: 41.9 dB(A)	

Accessories and Air Conditioning ON

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side dB(A)
		Measured	Measured
Low Idle	600	48.0	49.6
High Idle	N/A	N/A	N/A
Wide Open Throttle	2,900	68.6	69.7

Accessories and Air Conditioning OFF

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side dB(A)
		Measured	Measured
Low Idle	600	48.0	48.8
High Idle	N/A	N/A	N/A
Wide Open Throttle	2,900	68.8	69.8

Final Sound Level Meter Calibration Check: 93.7 dB(A)

Comments: None noted.

7.2 EXTERIOR NOISE TESTS



TEST BUS UNDER GOING
EXTERIOR NOISE TESTING



8. EMISSIONS TEST – DYNAMOMETER-BASED EMISSIONS TEST USING TRANSIT DRIVING CYCLES

8-I. TEST OBJECTIVE

The objective of this test is to provide comparable emissions data on transit buses produced by different manufacturers. This chassis-based emissions test bears no relation to engine certification testing performed for compliance with the Environmental Protection Agency (EPA) regulation. EPA's certification tests are performed using an engine dynamometer operating under the Federal Test Protocol. This emissions test is a measurement of the gaseous engine emissions CO, CO2, NOx, HC and particulates (diesel vehicles) produced by a vehicle operating on a large-roll chassis dynamometer. The test is performed for three differed driving cycles intended to simulate a range of transit operating environments. The cycles consist of Manhattan Cycle, the Orange County Bus driving cycle, and the Urban Dynamometer Driving Cycle (UDDS). The test is performed under laboratory conditions in compliance with EPA 1065 and SAE J2711. The results of this test may not represent actual in-service vehicle emissions but will provide data that can be used by recipients to compare buses tested under different operating conditions.

8-II. TEST DESCRIPTION

This test is performed in the emissions bay of the LTI Vehicle Testing Laboratory. The Laboratory is equipped with a Schenk Pegasus 300 HP, large-roll (72 inch diameter) chassis dynamometer suitable for heavy-vehicle emissions testing. The dynamometer is located in the end test bay and is adjacent to the control room and emissions analysis area. The emissions laboratory provides capability for testing heavy-duty diesel and alternative-fueled buses for a variety of tailpipe emissions including particulate matter, oxides of nitrogen, carbon monoxide, carbon dioxide, and hydrocarbons. It is equipped with a Horiba full-scale CVS dilution tunnel and emissions sampling system. The system includes Horiba Mexa 7400 Series gas analyzers and a Horiba HF47 Particulate Sampling System. Test operation is automated using Horiba CDTCS software. The computer controlled dynamometer is capable of simulating over-the-road operation for a variety of vehicles and driving cycles.

The emissions test will be performed as soon as permissible after the completion of the GVW portion of the structural durability test. The driving cycles are the Manhattan cycle, a low average speed, highly transient urban cycle (Figure 1), the Orange County Bus Cycle which consists of urban and highway driving segments (Figure 2), and the EPA UDDS Cycle (Figure 3). An emissions

test will comprise of two runs for the three different driving cycles, and the average value will be reported. Test results reported will include the average grams per mile value for each of the gaseous emissions for gasoline buses, for all the three driving cycles. In addition, the particulate matter emissions are included for diesel buses, and non-methane hydrocarbon emissions (NMHC) are included for CNG buses. Testing is performed in accordance with EPA CFR49, Part 1065 and SAE J2711 as practically determined by the FTA Emissions Testing Protocol developed by West Virginia University and Penn State University.

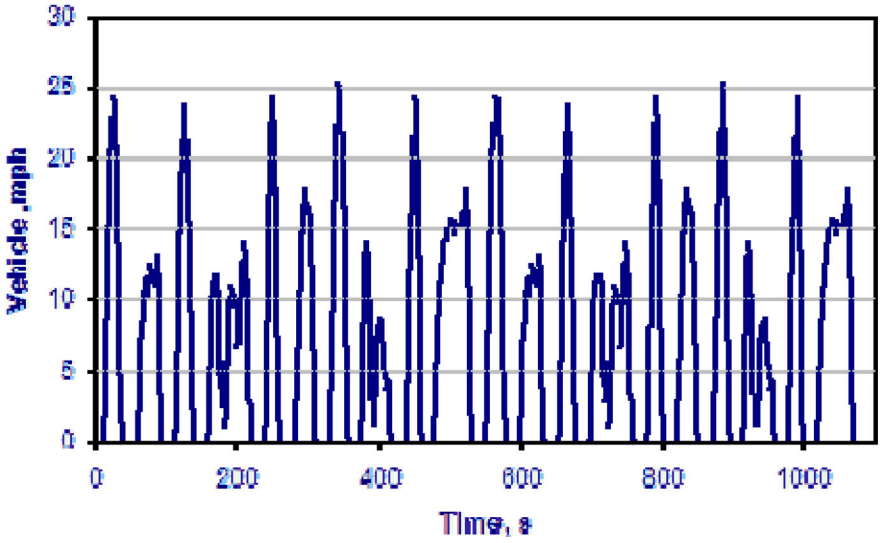


***Figure 1**. Manhattan Driving Cycle (duration 1089 sec, Maximum speed 25.4mph, average speed 6.8mph)*

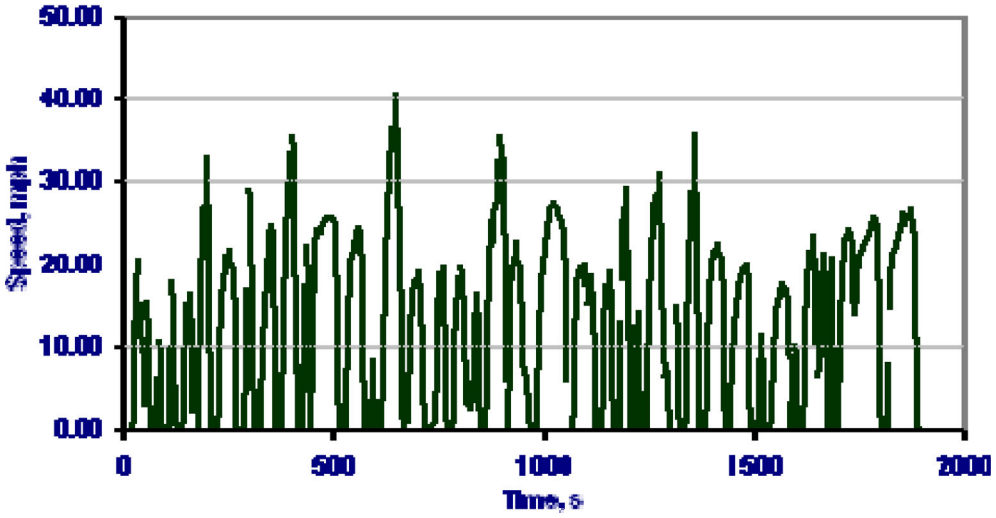


***Figure 2**. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41mph, Average Speed 12mph)*

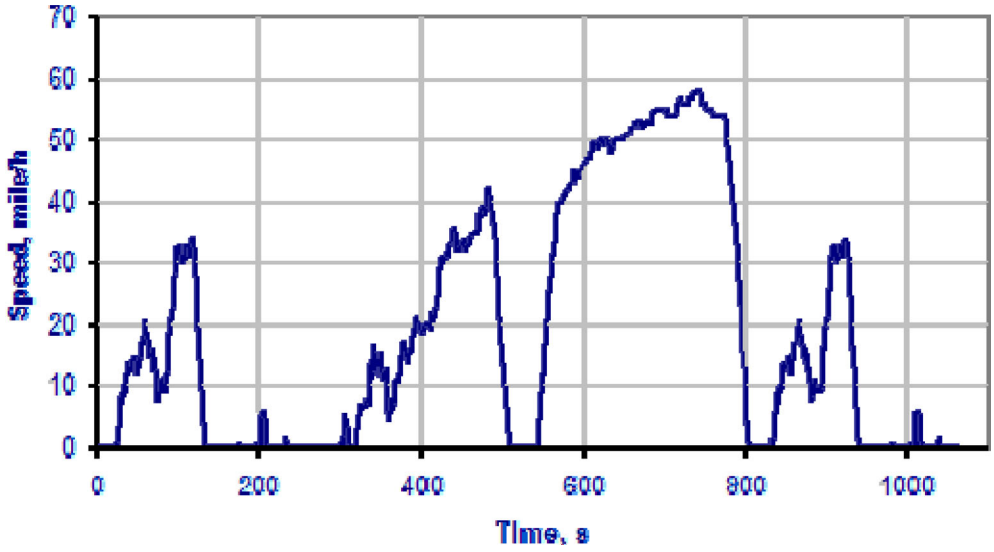


***Figure 3**. HD-UDDS Cycle (duration 1060seconds, Maximum Speed 58mph, Average Speed 18.86mph)*

8-III. TEST ARTICLE

The test article is a Glaval Bus, a Division of Forest River, model Concorde II transit bus equipped with diesel fueled ford Motor Co. model 6.7 L Powerstroke engine. The bus was tested on February 15, 2017.

8-IV. TEST EQUIPMENT

Testing is performed in the LTI Vehicle Testing Laboratory emissions testing bay. The test bay is equipped with a Schenk Pegasus 72-inch, large-roll chassis dynamometer. The dynamometer is electronically controlled to account for vehicle road-load characteristics and for simulating the inertia characteristics of the vehicle. Power to the roller is supplied and absorbed through an electronically controlled 3-phase ac motor. Absorbed power is dumped back onto the electrical grid.

Vehicle exhaust is collected by a Horiba CVS, full-flow dilution tunnel. The system has separate tunnels for diesel and gasoline/natural gas fueled vehicles.

In the case of diesel vehicles, particulate emissions are measured gravimetrically using 47mm Teflon filters. These filters are housed in a Horiba HF47 particulate sampler, per EPA 1065 test procedures.. Heated gaseous emissions of hydrocarbons and NOx are sampled by Horiba heated oven analyzers. Gaseous emissions for CO, CO2 and cold NOx are measured using a Horiba Mexa 7400 series gas analyzer. System operation, including the operation of the chassis dynamometer, and all calculations are controlled by a Dell workstation running Horiba CDCTS test control software. Particulate Filters are weighed in a glove box using a Sartorius microbalance accurate to 1 microgram.

8-V. TEST PREPARATION AND PROCEDURES

All vehicles are prepared for emissions testing in accordance with the Fuel Economy Pre-Test Maintenance Form. (In the event that fuel economy test was performed immediately prior to emissions testing this step does not have to be repeated) This is done to ensure that the bus is tested in optimum operating condition. The manufacturer-specified preventive maintenance shall be performed before this test. The ABS system and when applicable, the regenerative braking system are disabled for operation on the chassis dynamometer. Any manufacturer-recommended changes to the pre-test maintenance procedure must be noted on the revision sheet. The Fuel Economy Pre-Test Inspection Form will also be completed before performing. Both the Fuel Economy Pre-Test Maintenance Form and the Fuel Economy Pre-Test Inspection Form are found on the following pages.

Prior to performing the emissions test, each bus is evaluated to determine its road-load characteristics using coast-down techniques in accordance with SAE J1263. This data is used to program the chassis dynamometer to accurately simulate over-the-road operation of the bus.

Warm-up consists of driving the bus for 20 minutes at approximately 40 mph on the chassis dynamometer. The test driver follows the prescribed driving cycle watching the speed trace and instructions on the Horiba Drivers-Aid monitor which is placed in front of the windshield. The CDCTS computer monitors driver performance and reports any errors that could potentially invalidate the test.

All buses are tested at half seated load weight. The base line emissions data are obtained at the following conditions:

1. Air conditioning off
2. Evaporator fan or ventilation fan on
3. One Half Seated load weight
4. Appropriate test fuel with energy content (BTU/LB) noted in CDTCS software

5. Exterior and interior lights on
6. Heater Pump Motor off
7. Defroster off
8. Windows and Doors closed

The test tanks or the bus fuel tank(s) will be filled prior to the fuel economy test with the appropriate grade of test fuel.

8-VI DISCUSSION

The following Table 1 provides the emissions testing results on a grams per mile basis for each of the exhaust constituents measured and for each driving cycle performed.

TABLE 1 Emissions Test Results

Test Completed at Half SLW: 21,310			
Driving Cycle	**Manhattan**	**Orange County Bus**	**UDDS**
CO_2, gm/mi	2,881	1,497	1,229
CO, gm/mi	0.40	0.10	0.04
THC, gm/mi	1.60	0.02	0.01
CH_4, g/mi	1.33	0.01	0.01
NO_x, gm/mi	1.07	0.80	0.61
Particulates. gm/mi	0.005	0.002	0.002
Fuel consumption mpg	3.53	6.80	8.28

FOREST RIVER BUS

2367 CENTURY DRIVE · GOSHEN, IN 46528 · 1.800.348.7440

March 10, 2022

To Whom it May Concern,

This is to inform all interested parties that the authorized Startrans dealer for Fort Bend County RFP 22-034 is:

Creative Bus Sales
4955 W. Northgate Dr
Irving, TX 75062

Please let us know if there are any questions.

Sincerely,

Mike Anglemyer
Government Bids

U.S. Department
Of Transportation
**Federal Transit
Administration**

Headquarters

East Building, 5th Floor – TCR
1200 New Jersey Avenue, SE
Washington, DC 20590

August 31, 2021

Donall Hasty
Forest River: Elkhart Coach, Glaval Bus,
Starcraft, StarTrans Bus, Van, ElDorado-KS
Lone Star Van, Champion Bus
2367 Century Drive
Goshen, IN 46528

Re: TVM DBE Goal Concurrence/Certification Letter – Fiscal Year 2022

Dear Mr. Hasty:

This letter is to inform you that the Federal Transit Administration's (FTA) Office of Civil Rights has received Forest River's Disadvantaged Business Enterprise (DBE) goal and methodology for FY 2022 for the period of October 1, 2021–September 30, 2022. This goal submission is required by the U.S. Department of Transportation's DBE regulations at 49 CFR Part 26 and must be implemented in good faith.

We have reviewed your firm's FY 2022 DBE goal and determined that it complies with DOT's DBE regulations. Your firm is eligible to bid on FTA-funded transit contracts. This letter or a copy of the TVM listing on FTA's website may be used to demonstrate your firm's compliance with DBE requirements when bidding on federally funded vehicle procurements.

FTA reserves the right to remove/suspend this concurrence if your DBE program or FY 2022 DBE goal is not implemented in good faith. In accordance with this good faith requirement, you must submit your DBE Uniform Report to FTA by December 1, 2021. This report should reflect all FTA-funded contracting activity for the second period of FY 2021 (i.e., from April 1 to September 30).

Also note that your FY 2023 DBE goal methodology must be submitted to FTA by August 1, 2022. Any significant updates to the program plan must be submitted to FTA as they occur. If you have any questions, please contact the FTA DBE Team via email at *FTATVMSubmissions@dot.gov*.

Sincerely,

John Day
Program Manager
Office of Civil Rights

SARA REGISTRAR™

Certificate of Registration

This is to certify the Quality Management System of:

FOREST RIVER MANUFACTURING, LLC

Division 5

Location Addresses:

Starcraft Bus & Eldorado Bus
(Commercial Bus)
2367 Century Drive
Goshen, IN 46528

Forest River Van
2408 Century Drive
Goshen, IN 46528

StarTrans Bus and Glaval Bus
2412 Century Drive
Goshen, IN 46528

Part Sales and Customer Service
2372 Century Drive
Goshen, IN 46528

has been assessed and found to be in compliance with the requirements of

ISO 9001:2015

for the following scope:

Design, Manufacturing, Sales, and Administration of Commercial and Government Buses and Vans

Certificate Number: **SARA-2006-CA-0031-B**

Originally Registered:
January 26, 2009

Latest Issue:
July 1, 2021

Expiry Date:
January 25, 2024

President, SARA Registrar

Standards American Registrations Authority REGISTERED

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

IAS ACCREDITED Management Systems Certification Body MSCB-194

This registration is subject to the company maintaining its system to the required standard which will be monitored annually by SARA Registrar. This certificate remains the property of Standards American Registrations Authority (SARA Registrar) and shall be returned immediately upon request.
SARA Registrar Headquarter Mailing: 1807H Santa Rita Road, #175, Pleasanton, CA 94566

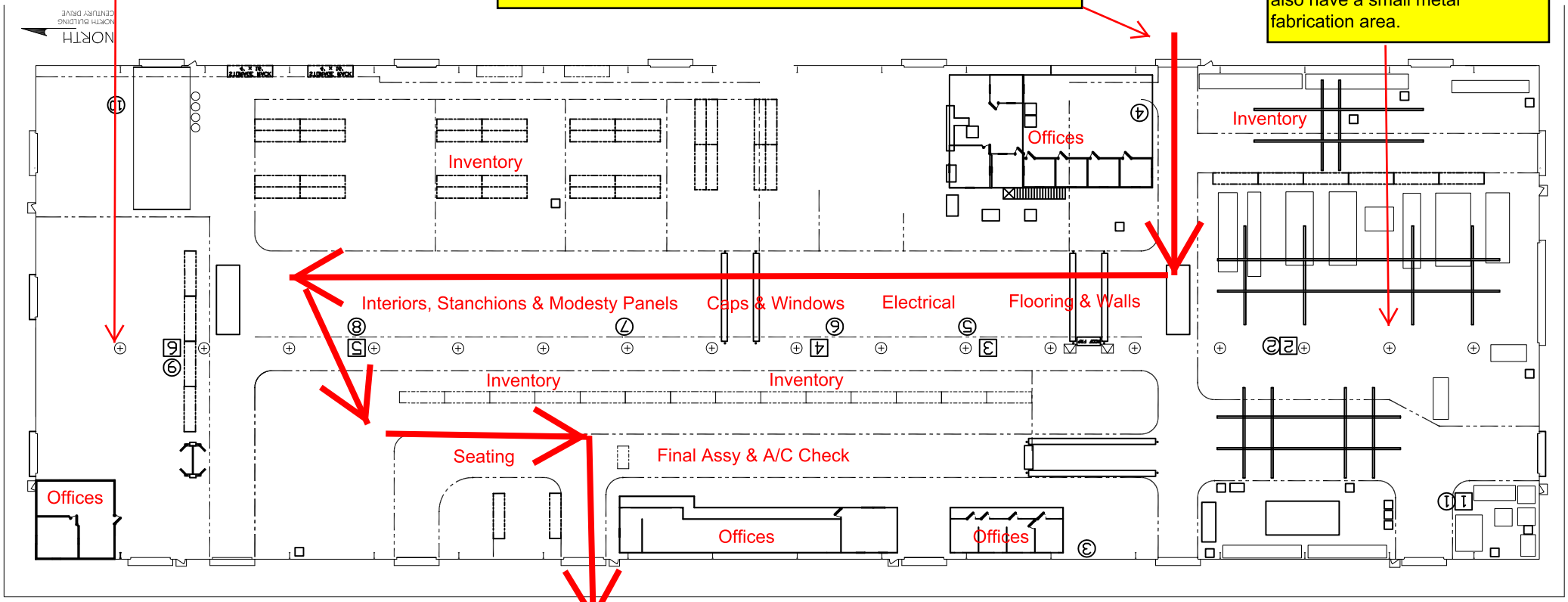
FOREST RIVER BUS

PRODUCTION PLANT 5A

This end of the building we call Float. It is where the buses are cleaned and all final work-off items are performed. Upon final Quality release from this area, units are ready to ship.

The long arrow below shows the main production line area. Units are run "side saddle" on rollers down the line. Fully loaded, the line holds 33 units. .

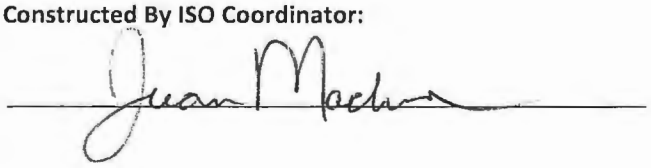
This area contains the weld shop, primer paint booth, chassis prep and body to chassis setting stations. Battery boxes and under-frame electrical run. We also have a small metal fabrication area.



Units exit from the line here and either wait for Float or go to paint. Between here and Float, Road and Water Tests are performed.

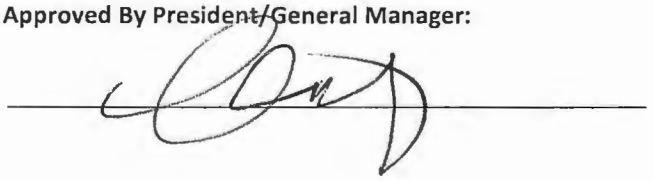
Signature Page

Constructed By ISO Coordinator:



2-6-17
Date

Approved By President/General Manager:



2/06/17
Date

Revision History

Rev Number	Rev Description	Effective Date
A	Initial Release	2/06/2017

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Organizational Introduction

The purpose of the Organizational Manual is to ensure the organization's commitment towards maintaining an internationally recognized Quality Management System and to provide a concise reference and organizational context that reflects the current operating practices. The organizational manual references documented information defined herein by means of process procedures, documents, flow charts, forms and records. This documented information defines the responsibilities, interactions and essential controls that must be exercised in order to carry out the various activities of planning, performing, measuring and analyzing to achieve an environment of continuous improvement.

Improvement efforts of the organization are to assure all requirements are met and the end result of the system meeting or exceeding organizational expectations with a focus on customer satisfaction.

The policy and documented information referenced in this organizational manual are designed to target the requirements of the ISO9001-2015 standard.

Organization Background

The organization is committed to continuously improving its quality management practices to improve product quality, to enhance customer satisfaction, and to maintain and build market share. To achieve our quality objectives, we have implemented a Quality Management System (QMS) based on the ISO 9001:2015 International Standard.

Organizational Manual Issue and Revision

The ISO Coordinator is responsible for the issue and revision of the Organizational Manual.

The Organizational Manual is reviewed periodically to ensure its conformance to current international standards as well as customer, organization and corporate requirements.

A revision number indicates a revision to the Organizational Manual, with each revision canceling and replacing the previous issue. The revision letter and date shown on each page indicate the current status of this manual. The ISO Coordinator and President/General Manager approve all revisions.

1 Organizational Application

The organization will apply the ISO 9001:2015 standards to all services provided and products developed.

2 Organizational Normative Reference

The organization will enforce all latest published ISO 9001:2015 standards.

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3 Organizational Terms and Definitions

Term	Meaning
Buyer.....	is a representative of the organization purchasing function that processes Material Requisitions, generates Purchase Orders, and places orders with vendors. The Buyer monitors vendor performance and works with Requestors and Vendors to address Vendor Corrective Action Requests. Vendors are evaluated and controlled according to requirements of the organization Purchasing Department.
Corrective Action Request (CAR)..	is used to document, control and correct nonconformities within the division or organization.
Customer.....	is the organization or person that receives a product or service.
Date (Last Update).....	is a field is within the document header that indicates the date of the document revision, i.e. the date when the format and/or content of the document was last changed/updated.
Department Managers.....	are responsible for operations and performance of processes.
Division 5.....	is the part of the organization that is controlled by ISO which encompasses both Starcraft Bus and StarTrans Bus.
Documents.....	in ISO 9001 usage, generally consist of permanent documentation describing or defining systems, processes, procedures, and products. Examples include product specification and Quality Manuals.
Facility Coordinator.....	maintains the tracking of all properties.
President/General Manager.....	is responsible for the overall operations of the division.
Human Resources.....	personnel support employees by administering compensation and benefit packages, as well as policies that promote individual and corporate growth.
Infrastructure.....	is the set of facilities, which may be under the control of the customer or the corporation.
ISO.....	is the International Organization for Standardization, a worldwide federation of national standards bodies formed in 1947.
ISO Coordinator.....	is the organization employee who has been assigned to support and maintain the organization ISO processes. The duties include, but are not limited to: coordination, submission and tracking of ISO documents, maintaining storage of ISO records.
IT Personnel.....	administer policies that protect and preserve administrative and corporate information and computing resources in accordance with the organization corporate policy.

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Term	Meaning
Management Review.....	is the review of the quality system by management to ensure the quality system remains suitable and effective.
Manufacturing.....	is a set of processes that transform requirements into specified characteristics or into the specifications of a product process or system.
Nonconformity.....	is the non-fulfillment of a requirement.
President.....	is responsible for the overall operations for multiple divisions.
Preventive Action.....	is the action taken to eliminate the cause of a potential nonconformity or other undesirable situation.
Process.....	is the set of interrelated or interacting activities that transforms inputs into outputs.
Process Control.....	is the identification of and action on all identified factors affecting process variability, proper maintenance of equipment, use of statistical process control methods, and degree of adherence to valid work instructions.
Process Owner(s).....	are personnel responsible for the development and maintenance of Procedures and Work Instructions.
Product Designer.....	performs product design, development, trial activities, and other assignments as directed by Manager.
Purchasing	is responsible for material purchase and vendor selection.
Quality.....	is the degree to which a set of inherent characteristics fulfills requirements.
Quality Assurance	is responsible for the QA.
Quality Audit.....	is the systematic, independent, and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which agreed criteria are fulfilled.
Quality Management.....	is the coordinated activities to direct and control an organization with regard to quality. Direction and control with regard to quality generally includes establishment of the quality policy, quality objectives, quality planning, quality control, quality assurance, and quality improvement.
Quality Management System.....	is a set of interrelated or interacting processes with regard to quality. It generally includes establishment of the quality policy, quality objectives, quality planning, quality control, quality assurance, and quality improvement.
Quality Manual.....	is the document specifying the Quality Management System of an organization.
Quality Policy.....	represents the overall intentions and direction of an organization, with respect to quality, as formally expressed by senior management.

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Term	Meaning
Records.....	are the documents providing current and historical evidence of activities conducted. Examples include inspection and test records, records confirming traceability, evidence of certification, and/or preventive and corrective action. Electronic data are acceptable as a record.
Retention.....	refers to documentation that is retained by the appropriate program for an indefinite period. Upon completion of the program, this documentation may be archived or destroyed. In many cases, this documentation reflects the history of the program.
Revision.....	is a field located within the ISO document header that indicates the version of the document. The revision will be changed to the next sequential letter whenever the format or content of the document is changed. In addition, the date field will be updated to indicate the date of the revision.
Statistical Process Control.....	is the application of statistical techniques to the control of processes.
Supervisor.....	is a organization employee who has been assigned to manage a specific area or department.
Supplier.....	is the organization or person that provides a product.
Technician.....	performs technical activities consisting of, but not limited to, fabrication, assembly, and testing as assigned by the Supervisor and/or Dept. Manager in order to meet program requirements.
Traceability.....	is the ability to trace the history, application, location or compliance of that which is under consideration.
Training.....	is the result of teaching and learning, so as to be fitted, qualified, or proficient in a specific task.
Work Environment.....	is the set of conditions under which work is performed. Conditions include physical, social, psychological, and environmental factors such as temperature, recognition schemes, and ergonomics.

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4 Organizational Context

4.1 Organizational Context

Top and senior level management will identify the internal and external influences of the organization that may positively or negatively affect the organizations purpose, strategic direction and/or impede its ability to achieve the intended results of the Quality Management System.

Top management will achieve this by outlining the interaction of those influences on the QMS through process charts below under references.

Reference:

Organizational Context: QMS

Chart QMS-01-01 Organizational External and Internal Influences

Chart QMS-01-02 QMS Process Interaction of Influences

Chart QMS-01-03 Internal Interaction Sequence

Chart QMS-01-04 Documentation Requirements

4.2 Interested Parties

The organization shall determine interested parties based on their effect on the organization and meeting customer requirements and expectations. When determining interested parties, the organization shall consider:

- Interested Parties that are relevant to the QMS
- External Parties that are relevant to the QMS

The organization shall monitor and review information regarding these interested parties and their requirements. Interested parties have been determined and are as follows:

- Dealers
- Retail Customers
- Vendors
- Employees

Reference:

Organizational Context: Interested Parties

Chart QMS-01-02 Process Interaction of Influences

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4.3 Quality Management System Scope

The organization, located in Indiana has developed this Quality Manual, associated procedures, work instructions and forms, using the ISO 9001:2015 Standard. The Quality Manual is to be used to ensure that the services provided and the products developed by the organization meet customer requirements and regulatory statutes.

Rigorous application of the organization's Quality System will ensure that customer and statutory requirements are met fully and that the processes utilized will be continually improved.

The organization is implementing and maintaining a Quality Management System as stated below:

Reference Standard	Exclusion
ISO 9001:2015	None

The organization's documented Quality Management System includes:

- A documented Quality Policy, as well as specific measurable Quality Objectives for customer satisfaction and product quality;
- An Organizational Manual;
- Documented procedures, including those required by the ISO 9001:2015 standard: Control of Documents, Control of Records, Internal Audit, Control of Nonconforming Product, Corrective Action and Preventive Action;
- Documents required by the organization to ensure an effective planning operation and control of its processes; and
- Quality records required by ISO 9001:2015.

4.4 General Requirements

The organization has established a documented and implemented Quality Management System and shall continually improve its effectiveness in accordance with the ISO 9001:2015 requirements.

The organization has completed the following:

- Identified the necessary processes, interface, interaction, and sequences (Input and Output of processes) for the operation of the business through the overall business process.
- Determined the criteria and methods required for monitoring processes and performance through the use of procedural and other documents relevant to the quality processes to ensure the effectiveness of the operation and these processes.
- Assigned employee responsibilities and authorities to complying with all ISO requirements and continually improve the effectiveness of the Quality System.

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- Allocated its resources, including manpower, facilities, and documentation information in terms of process procedures, forms and work instructions in order to support operational processes and implement any changes needed to ensure that the processes are geared towards achieving planned results and continual improvement.
- Identified processes necessary to determine and address risks and opportunities
- Identified resources in terms of reports and records to be maintained to measure and monitor (where applicable) processes and to analyze its processes.

Where *Forest River – Division 5* chooses to outsource any process that affects product conformity to requirements, *Forest River – Division 5* ensures control over such processes. The type and extent of control to be applied to these outsourced processes are defined within the quality management system.

Processes needed for the quality management system referred to above include processes for management activities, provision of resources, product realization, and measurement, analysis, and improvement.

An outsourced process is identified as one being needed for the *Forest River – Division 5* quality management system, but chosen to be performed by a party external to the organization.

Ensuring control over outsourced processes does not absolve *Forest River – Division 5* of the responsibility of conformity to all Customer, statutory, and regulatory requirements. The type and extent of control to be applied to the outsourced process can be influenced by factors such as

- the potential impact of the outsourced process on the *Forest River – Division 5* capability to provide product that conforms to requirements,
- the degree to which the control for the process is shared;
- the capability of achieving the necessary control through the application of clause 8.4.3 (Referred to in procedure PUR-01)

Outsourcing a process to another organization typically involves the purchase of those services; as a result, compliance with Purchasing, including the controls mentioned in clause 7.4 apply equally to the supplier selected to perform the outsourced process.

Reference:

Organizational Context: Sequence and Interactions

Procedure QMS-01 Understanding the Organization and its Context

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5 Organizational Leadership

5.1 Leadership and Commitment

5.1.1 General

Demonstrating commitment to the development and continual improvement of the Quality Management System is the responsibility of the Senior Management team of the organization.

- Has established a quality policy to communicate to all employees the importance of applying the ISO standards to meet customer requirements;
- Has defined quality objectives to assess the effectiveness of the Quality Management System to provide direction and achieve desired results;
- Conducts periodic management reviews to ensure that the quality policy and objectives remain relevant and suitable with respect to current operation of the organization and that the resources needed to support these objectives are sufficient and appropriately allocated; and
- Ensures that customer, statutory and regulatory requirements are determined, fulfilled and communicated.

Reference:

Organizational Leadership: Leadership and Commitment

Procedure LDR-01; Leadership and Commitment

Chart LDR-01-01; Organizational Authority Tree

5.1.2 Customer focus

Top Management will demonstrate active involvement in establishing and maintaining mutually beneficial relationships between the organization and its customers. The organization will establish and maintain procedure(s) for communicating with selected customers.

5.2 Quality Policy

5.2.1 Establish the quality policy

Forest River – Division 5's has established quality policies for Starcraft Bus and StarTrans Bus and they are as follows:

"Starcraft Bus is committed to being the leader in the small and mid-size bus market by meeting or exceeding customer requirements and providing continuous improvement."

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"StarTrans Bus is committed to continuous improvement of quality, service and safety through a partnership of customer and employee communication and innovation."

5.2.2 Communicate the quality policy

Senior Management has determined the channels and processes necessary to facilitate internal communication for effective implementation of the Quality Management System.

Organizational goals and customer expectations are conveyed through policy and objective statements. Periodic meetings are held with the President, General Manager, Department Managers, Supervisors and relevant personnel to discuss the latest issues relating to operation. Results of discussion, testing, and inspection are channeled to the appropriate personnel through reports, records, and meeting minutes as necessary. Other information is conveyed through memos and verbal conversation.

These polices will be communicated throughout the organization via various means which include, but are not limited to:

- Plant banners that are appropriately visible
- Forest River – Division 5 employee training program

5.3 Organizational Roles, Responsibilities and Authorities

The organization President/General Manager establishes the Quality Policy and approves the Quality Management System.

The ISO Coordinator of the organization is authorized to document, implement, and maintain the Quality Management System described in this manual. The ISO Coordinator communicates quality goals to the organization and facilitates discussion of the Quality Management System with senior management via Management Reviews.

6 Organizational Planning

6.1 Assessment of Risks and Opportunities

The organization shall consider planning and acting to address issues of internal and external risks and opportunities. Consideration of risks and opportunities are ones that may:

- Negatively impact the QMS
- Improve on positive effects of the QMS
- Reduce undesirable effects of the QMS
- Attain continuous improvement

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The organization shall plan how to address, what to address and evaluate actions of addressing risk and opportunities. Management has determined areas of risk and opportunities to be reviewed are:

- Warranty Reporting
- Dealer Survey
- Customer Feedback
- Vendor Evaluations
- Internal Audits
- Quality Objectives
- Corrective Actions

Documented actions are taken to address potential risks and opportunities to address or prevent occurrence. A documented procedure is established for action that includes the following activities:

- Identify potential risks and opportunities issues;
- Evaluate scope of issues;
- Evaluate whether or not there is a need to implement action(s);
- Implement the action(s);
- Verify the effectiveness of the action(s) taken.

Reference:

> *Organizational Planning: Risks and Opportunity Assessment*
> *See Procedure RAO-01; Risks and Opportunity Assessment*
> *See Procedure EVS-01; Evaluation of Customer Satisfaction*
> *See Procedure EVD-01; Evaluation of Operational Data*
> *See Procedure VQC-01; Purchasing Control of Vendor Qualifications*
> *See Procedure QOB-01; Determining Quality Objectives*
> *See Procedure INA-01; Internal Audits*

6.2 Quality Objectives

The organization has established Quality Objectives as stated in procedure QOB-01. The Management Representative maintains these Quality Objectives in coordination with Senior Management and Department Managers. The Quality Objectives are reviewed, measured, and analyzed during Management Reviews, Project Review, and at other times as applicable.

In order to achieve the Quality Objectives, the organization shall:

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- Implement and maintain a Quality Management System in accordance with ISO 9001:2015.

- Strive toward continual improvement in its operations and ensure that such improvements are identified and communicated effectively.

Ensure all employees are complying with the Quality Management System and are dedicated to continually improving the effectiveness of the Quality System. In order to gauge the effectiveness of the Quality Management System, the organization Senior Management shall:

- Ensure that the Quality Policy and Objectives are communicated to and understood by the employees.

- Periodically review the performance indicators and the Quality Objectives with department managers and quality steering committee, and determine corrective action plans to remedy any deficiencies.

Reference:

Organizational Quality Objectives: Planning and Achievement

Procedure QOB-01; Planning and Achieving Quality Objectives

6.3 Planning of Changes

If any changes should be necessary to the quality management system, the organization will refer to the following guidelines:

- Define the purpose of the change
- Consider the integrity of the system and the potential impact positive and/or negative
- Are additional or different resources needed to accomplish the change
- Define the scope of authorities and responsibilities for those affected
- Ensure approval is granted prior to implementing

Reference:

Organizational Planning Process

Procedure QMC-01; Quality Management Changes

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7 Organizational Support

7.1 Resource

7.1.1 General

In order to implement, maintain, and continually improve the Quality Management System, the organization shall determine and provide the necessary internal and external resources, including manpower, infrastructure, measuring equipment and work environment, geared towards fulfilling customer satisfaction.

7.1.2 People

Personnel performing work affecting conformity to product requirements shall be competent on the basis of appropriate education, training, skills and experience.

Conformity to product requirements may be affected directly or indirectly by personnel performing any task within the quality management system.

Forest River – Division 5 determines the necessary competence for personnel performing work affecting conformity to product requirements. Externally, Forest River, Inc. provides the necessary corporate screening of applications prior to the hiring of personnel.

Where applicable, *Forest River – Division 5* provides training or takes other actions to achieve the necessary competence.

Training Records are maintained by the employee representative and available for review

Reference:

Organizational Support: People Resources

Procedure PPL-01; Personnel of the Quality Management System

7.1.3 Infrastructure

The organization shall identify, provide, and maintain the infrastructure needed to achieve product conformity. This infrastructure includes workspace, associated utilities, process equipment, and supporting services. Externally, Forest River, Inc. IT provides the necessary corporate back of the network drives where all records are held.

Reference:

Organizational Support: Infrastructure Resources

Procedure INF-01; Infrastructure Resources

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7.1.4 Work environment

The organization shall identify and manage the work environment needed to achieve product conformity.

The term "work environment" relates to conditions under which work is performed including physical, psychological, and social environmental, as well as other factors (such as noise, temperature, humidity, lighting, or weather).

Reference:

Organizational Support: Work Environment

Procedure ENV-01; Work Environment Resources

7.1.5 Monitoring and measuring resources

The organization shall determine the monitoring and measurement devices (i.e., test equipment) necessary to ensure product conformity and ensure that required test equipment are calibrated and/or certified to ascertain their accuracy. Calibration of test equipment used by the organization is performed externally or internally whose calibration masters can be traced and approved in accordance with national and/or international standards.

Confirmation of the ability of computer software to satisfy the intended application would typically include its verification and configuration management to maintain its suitability for use.

Reference:

Organizational Support: Monitoring Measuring and Testing Equipment

Procedure CBE-01; Calibration Equipment Monitoring

7.1.6 Organizational knowledge

Employees are provided with the necessary knowledge through training to equip them with the basic skills to carry out their work effectively during their organizational orientation. The Managers identify employee training needs and training is provided through internal and/or external means.

Where by the knowledge of the work required of an employee to carry out a process is new or undefined, the organization may take the necessary actions to capture undefined knowledge as determined by team leaders or managers to address changing needs or trends of the process

Knowledge may be captured and maintained by way of but not limited to the creation or revisions of process procedures, work instructions, process control documents or forms.

Reference:

Organizational Support: Organizational Knowledge

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* *See Procedure ROA-01; Risk and Opportunity Action Plan*
* *See Procedure CPT-01; Competence of Personnel Resources*

7.2 Competence

To ensure that job competency is satisfied, new hires are selected based on their qualification and/or experience as required by the position according to the job requirements stated in the Job Description. New hires undergo employee orientation training. Where applicable, on-the job training is given, based on judgment by the Manager.

Employees are provided with the necessary training to equip them with the basic skills to carry out their work effectively. The Managers identify employee training needs. Training is provided through internal and/or external means.

Reference:

Organizational Support: Organizational Knowledge
Procedure CPT-01; Competence of Personnel Resources

7.3 Awareness

To ensure that employees are informed of the QMS, objectives, and expectations as it relates to job performance and safety requirements, employees are taken through a hire orientation. Employees are made aware of this information at that time.

Employees are provided with the necessary documentation to sign and initial that they have been made aware and understand these requirements.

Reference:

Organizational Support: Organizational Knowledge
Procedure AWR-01; Awareness of Personnel Resources

7.4 Communication

To ensure that communication is satisfied, all department heads, supervisors, and management personnel are made aware of the internal and external communications mapped using the Process Interaction and Organizational Tree charts.

Employees are provided with the necessary documentation to coordinate communication via controlled forms within the QMS

Reference:

Organizational Support: Organizational Knowledge

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Procedure COM-01; Communication of Personnel Resources

7.5 Documented Information

7.5.1 General

Processes are maintained to ensure that documents related to the Quality Management System are properly controlled. The documents include the organizational manual, process procedures, forms, work instructions, reports, charts and specifications.

Forest River – Division 5 ensures that documents of external origin determined to be necessary for the planning and operation of the quality management system are identified and their distribution controlled.

7.5.2 Creating and updating

These documents are drafted by process owners in coordination with the ISO Coordinator, reviewed by experts in the functional areas, and approved prior to issue. Procedures are reviewed periodically for continued applicability and updated as necessary to reflect current practices. When changes are made to these documents, the ISO Coordinator ensures that the document revision status is clearly identified on the documents.

The ISO Coordinator shall ensure that all documents are legible, and readily retrievable.

7.5.3 Control of documented information

The organization maintains a documented procedure for identification, storage, protection, retrieval, retention, and disposition of quality records. These records are maintained for effective operation, traceability, and to demonstrate compliance to its Quality Management System. The records are kept as printed copies (i.e., "hardcopy") and/or in electronic form (i.e., "softcopy").

Records are maintained and controlled.

Records established to provide evidence of conformity to requirements and of the effective operation of the quality management system are controlled.

Records are to remain legible, readily identifiable and retrievable.

Reference:

Document Control Process: Documented Information

Procedure ISO-01; Control of Documented Information

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8 Organizational Operation Control

8.1 Planning and Control

The organization shall plan and develop the processes needed for product realization. The planning of the product realization processes shall be consistent with the Quality Management System.

Senior Management ensures that the planning of the Quality Management System is accomplished to meet the Quality Objectives. Planning of the Quality Management System is carried out at appropriate stages of the product realization process.

In planning Product Realization, the organization determines the following requirements for the product:

- The need to establish processes, documents, and provide resources specific to the product;
- Required verification, validation, monitoring, inspection, and test activities specific to the product and the criteria for product acceptance; and
- Records needed to provide evidence that the realization processes and resulting product meet requirements.
- Establish processes, and documents, and to provide resources specific to the product
- Verification, validation, monitoring, measurement, inspection and test activities specific to the product and the criteria for product acceptance

Operational Planning and Control: Provisions of Product Control
See Clauses 8.2 - 8.7 Below...

8.2 Requirements of Products and Services

8.2.1 Customer communication

Sales and Office departments are responsible for handling communications with customers relating to inquiries for product information, order processing, order amendment, and customer feedback.

8.2.2 Determining Requirements for products and services

The organization shall determine the following requirements relating to product:

- Customer requirements, including those for delivery and post-delivery activities;

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- Requirements not stated by the customer, but necessary to meet intended purpose for use of the product;
- Product-related statutory and regulatory requirements; and
- Organization requirements and policy.

8.2.3 Review of the requirements for products and services

Prior to accepting a customer order, a review of the order requirements, such as price, delivery time, terms, and conditions, is conducted.

- Discrepancies arising from the review shall be resolved with the customer, and
- The organization's capability of meeting the defined requirements is established.

When orders are placed through verbal means, the customer requirements are confirmed in writing before acceptance of the order(s).

8.2.4 Changes to requirements for products and services

When amendments to an order are made, the changes are documented and the relevant documents are modified. The change is conveyed to the related department through revised documents or memos.

Reference:

Operational Planning and Control: Customer Requirements for Products and Services
Procedure SLS-01; Sales Communication of Requirements
Procedure SQO-01; Sales Determination of Requirements
Procedure SOR-01; Sales Review of Requirements
Procedure SCO-01; Sales Changes to Requirements

8.3 Design and Development

8.3.1 General

The Design and Development Procedure documents methods and practices relevant to design and development activities in order to achieve consistent operation and conformity to customer requirements. The documented procedure defines responsibilities of technical personnel involved in design and ensures effective communication and clarity of procedures across the various programs. The documented procedure consists of:

- Planning of stages and controls;
- Input requirements for specific designs;
- Controls to monitor and evaluate results of the design process;
- Outputs meet input requirements and acceptance criteria; and

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- Identifying, reviewing and controlling changes to design and documentation.

Project specific plans may be developed and documented to ensure proper control of product design and related activities.

The outputs of design and development is in a form suitable for verification against the design and development inputs and shall be approved prior to release.

The design output also consider product packaging (when applicable)

Information for production and service provision includes details for the preservation, of product (when applicable)

Reference:

Operational Planning and Control: Design and Development

Procedure ENG-01; Design and Development

Procedure ECN-01; Design and Development Changes

8.4 Control of Externally Provided Processes, Products and Services

8.4.1 General

The organization purchasing function is responsible for selecting and purchasing from suppliers who are able to meet specified purchase requirements, such as price, delivery, quality, etc. Vendors are evaluated and controlled according to processes within the organization Purchasing Department.

8.4.2 Type and extent of control

Upon delivery of products by suppliers, shipping/receiving personnel ascertain that received products/services are in accordance with specifications and established quality parameters when possible. Final quality verification is performed at the line.

Reference:

Operational Planning and Control: Control of External Providers

Procedure VQC-01; Control of Purchasing Process

8.4.3 Information for external providers

Information needed to support the purchasing activities is captured in a Purchase Order and/or other records that specify the terms and conditions for the intended purchase.

Reference:

Operational Planning and Control: Control of Purchasing Information

Procedure PUR-01; Purchasing of External Products and Services

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8.5 Production and Service Provisions

8.5.1 Control of production and service provisions

Process control methods used in product realization include:

- Availability of information that describes the product;
- Where necessary, use of work instructions, specifications, and other information/documents;
- Use of suitable machines and equipment;
- Availability and use of monitoring and measuring devices; and
- Implementation of product release, delivery and post-delivery support activities.
- Where validating the resulting output cannot be verified by subsequent monitoring or measurements
- Control of changes to the production process

Not applicable. Forest River – Division 5 is able to identify processes for Production and Service Provision prior to release of product via monitoring and measuring.

Reference:

Operational Planning and Control: Production and Service Provisions

Procedure PRD-01; Control of Production Provisions

Procedure PRD-02; Control of Work Instructions

8.5.2 Identification and Traceability

Where practical, all material and components, except for common parts and consumables, shall be clearly identified to prevent mix-up and unintended use. Material that has been verified against specific quality assurance requirements shall be clearly identified to indicate the status for use.

Identification is applied from received product to in-process and final product.

Forest River – Division 5 identifies the product status with respect to monitoring and measurement requirements throughout product realization.

Where traceability is a requirement, *Forest River – Division 5* controls the unique identification of the product and maintains records.

Reference:

Operational Planning and Control: Identification and Traceability

Procedure IDT-01; Control of Identification and Traceability

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8.5.3 Property belonging to customers or external providers

The organization shall exercise care with customer property while it is under its control. The organization will identify, verify, and protect customer property provided for use or incorporation into the product. If any customer property is lost, damaged, or otherwise found to be unsuitable for use, this information will be reported immediately to the customer and appropriate records maintained. Action will be taken to reduce further occurrences.

If any customer property is lost, damaged, or otherwise found to be unsuitable for use, *Forest River – Division 5* will report this to the customer and maintain records.

Customer property can include intellectual property and personal data.

Reference:

Operational Planning and Control: Control of Customer Property

Procedure REC-01; Control of External and Customer Property

8.5.4 Preservation

The organization shall ensure that product conformity is maintained throughout the production process until the delivery to its intended destination is completed. Conformance maintenance shall include proper identification, handling, packaging, storage, and protection of the product and the constituent components against loss, damage, and deterioration.

Reference:

Operational Planning and Control: Preservation of Products

Procedure SHP-01; Shipping and Preservation of Products

8.5.5 Post-delivery activities

The organization shall meet requirements for post-delivery communications and activities associated with its products. The following must be considered when determining post-delivery activities:

- Statutory and regulatory requirements,
- Potential undesired consequences associated with the organization's products,
- Customer feedback
- Customer requirements for intended use and maintenance
- Intended lifetime of products

Reference:

Operational Planning and Control: Post-Delivery Activities

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Procedure CSV-01; Customer Service and Post Delivery Activities
Procedure WTY-01; Determination of Product Warranty Statements

8.5.6 Control of changes

The organization shall review and control changes for production and services, to the extent necessary to ensure continuing conformity with requirements

The organization shall retain documented information describing the results of the review of changes, the person(s) authorizing the change, and any necessary actions arising from the review.

Reference:

Operational Planning and Control: Control of Changes
** See Procedure PRD-01; Procedure; Contral of Changes*

8.6 Release of Products and Services

Managers ensure that proper records are kept to demonstrate the evidence of conformity for the monitoring and measurement carried out. Managers shall ensure that results of such activities, such as inspection/test reports, are recorded as evidence of conformity with the acceptance criteria and authorized by the personnel responsible for release of product.

Product release without completion of planned arrangement and endorsement of monitoring and measurement activities is not allowed. However, should circumstances arise where urgent release is required, the approval of department head or other authorized personnel and where applicable, customer approval shall be obtained.

Evidence of conformity with the acceptance criteria will be maintained.

Records will indicate the person(s) authorizing release of product for delivery to the customer.

The release of product and delivery of service to the customer will not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

Reference:

Operational Planning and Control: Release of Products and Services
Procedure QAI-01; Quality Assurance Approvals

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8.7 Control of Nonconforming Outputs

Nonconforming product refers to material, equipment and the organization created product that is out of specification. A documented procedure is established for handling nonconforming product to prevent unintended use.

A documented procedure has been established to define the controls and related responsibilities and authorities for dealing with nonconforming product

Where applicable, *Forest River – Division 5* will deal with nonconforming product by one or more of the ways as described in the referred procedure

Forest River – Division 5 will take action appropriate to the effects, or potential effects, of the nonconformity when nonconforming product is detected after delivery or use has started.

When nonconforming product is corrected it will be subject to re-verification to demonstrate conformity to the requirements.

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, will be maintained.

Reference:

Operational Planning and Control: Control of Quality Nonconforming Outputs

Procedure QCI-01; Quality Control Inspection

9 Organizational Performance Evaluation

9.1 Monitoring, Measuring, Analysis and Evaluation

9.1.1 General

The organization shall plan and implement processes that demonstrate product conformity to the Quality Management System and processes that support continuous improvement of the Quality Management System. These processes include, but are not limited to:

- Monitoring and Measurement of product quality;
- Control of Nonconforming Product; and
- Control of Monitoring and Measuring Devices.

9.1.2 Customer satisfaction

The organization considers customer satisfaction as an important performance indicator of the product quality process. The Dealer Satisfaction Survey (EVS-01-01) is carried out on a periodic basis to capture the feedback from the customer. Customer complaints are

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documented as Customer Corrective Action Requests and attended to at the earliest possible time.

Monitoring customer perception can include obtaining input from sources such as customer satisfaction surveys, customer data on delivered product quality, user opinion surveys, lost business analysis, compliments, warranty claims, reports.

Reference:

Organizational Performance: Customer Satisfaction

Procedure EVS-01; Customer Satisfaction Evaluation

9.1.3 Analysis and evaluation

Suitable methods are applied for monitoring, and where applicable, measurement of the Quality Management System processes, including support processes. These methods shall demonstrate the ability of the processes to achieve planned results. When processes are found to be nonconforming, corrective action shall be taken, as required, to ensure conformity of the process.

When determining suitable methods *Forest River – Division 5* considers the type and extent of monitoring or measurement appropriate to each of its processes in relation to their impact on the conformity to product requirements and on the effectiveness of the quality management system.

Where deemed suitable and useful, data related to the Quality Management System are collected and analyzed to gauge effectiveness and to determine where continual improvement can be made. The data analysis shall include the following areas:

- Customer satisfaction by way of warranty claims
- Product conformance to requirements; and
- Process trends and product characteristics.

Reference:

Organizational Performance: Operational Data Analysis Metrics

Procedure EVD-01; Operational Data Analysis

9.2 Internal Audit

A documented procedure describing the responsibility and requirements for planning and conducting audits, reporting of results, and maintenance of records is established. Internal audits are performed at least once a year to gauge the effectiveness of actual work processes against the requirements of ISO 9001.

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Audit procedures, defining the audit criteria, scope, frequency, and method, shall be planned according to the complexity of the processes. Personnel outside the audit area will be used to perform the audit. Discrepancies arising from the audit are recorded on audit report forms and action taken as required for resolution.

A documented procedure has been established to define the responsibilities and requirements for planning and conducting audits, establishing records and reporting results.

The managers for the area being audited ensure that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes.

Records of the audits and their results are maintained.

Reference:

Organizational Performance: Internal Auditing and Monitoring

Procedure INA-01; Internal Auditing and Monitoring

9.3 Management Review

9.3.1 General

Management shall review the effectiveness and suitability of the Quality Management System at least semi-annually against the quality policy and objectives and ISO 9001 requirements. The ISO Coordinator will maintain all records of this review.

9.3.2 Management review inputs

The review shall cover the following inputs:

- Progress toward achieving the established Quality Objectives,
- Internal and external audit results;
- Customer feedback;
- Process performance and product conformity;
- Status of corrective actions;
- Follow-up actions from previous management reviews;
- Planned changes that could affect the Quality Management System;
- Risks, Opportunities and recommendations for improvement; and
- Need for changes to the Quality Management System, including the Quality Policy and Quality Objectives.

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9.3.3 Management review outputs

Shortcomings in the Quality Management System are being addressed and documented in the Management Review Minutes. Actions and decisions arising from the Management Review shall include:

- Improvement of the effectiveness of the Quality Management System and its processes;
- Improvement of product related to customer requirements; and,
- Resource requirements.
- Action Item List for Departments.

Reference:

Operational Performance: Management Review

Procedure MNG-01; Management System Review

10 Organizational Improvement

10.1 General

10.2 Nonconformity and Corrective Actions

Nonconforming product refers to material, equipment and the organization created product that is out of specification. A documented procedure is established for handling nonconforming product to prevent unintended use.

A documented procedure has been established to define the controls and related responsibilities and authorities for dealing with nonconforming product

Where applicable, *Forest River – Division 5* will deal with nonconforming product by one or more of the ways as described in the referred procedure

Forest River – Division 5 will take action appropriate to the effects, or potential effects, of the nonconformity when nonconforming product is detected after delivery or use has started.

When nonconforming product is corrected it will be subject to re-verification to demonstrate conformity to the requirements.

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, will be maintained.

Corrective action is taken to prevent recurrence upon detection of nonconformities. A documented procedure is established for corrective action that includes the following activities:

— Proprietary Document — Disclosure Restricted To Employees and Authorized Holders —

Important Note: A printed copy of this document may not be the document currently in effect.
To verify the controlled version, or to obtain a copy, please contact the ***ISO Coordinator.***

- An investigation will be carried out for nonconformities that warrant corrective action in order to determine the causes;
- Corrective action results will be recorded; and
- Follow-up on the action taken to verify the implemented solution's effectiveness.

Reference:

Organizational Improvement: Nonconforming Material Reporting
Procedure NMR-01; Nonconforming Material Actions
Organizational Improvement: Corrective Action Reporting
Procedure CAR-01; Corrective Action Reporting

10.3 Continual Improvements

The organization shall continually improve on the QMS. Results of monitoring and evaluations shall determine the needs and opportunities for improvement; staying focused on the key areas listed below:

- Customer satisfaction;
- Warranty data mining
- Internal audit;
- Processes; and
- Product quality

Improvement is gained through corrective and preventative actions focusing on the key areas above. Actions are taken to address the threatening issues or potential threatening issues through root cause analysis, accompanied by short and long term solutions.

Reference:

Organizational Improvement: Continual Improvement Reporting
Procedure RAO-01; Risk and Opportunity Assessment
Procedure CAR-01; Corrective Actions

— Proprietary Document — Disclosure Restricted To Employees and Authorized Holders —
Important Note: A printed copy of this document may not be the document currently in effect.
To verify the controlled version, or to obtain a copy, please contact the ***ISO Coordinator***.

RAIN BOOTH INFORMATION

Constructed and opened in 2005 as part of a corporate-wide, pre-delivery inspection facility, the Forest River 20 ft. x 50 ft. motorized vehicle rain booth utilized by Forest River Bus offers exceptional performance in the area of water leak detection.

The vehicle rain booth adds front wall nozzles, simulating the pelting of oncoming rain at high-way speeds. The rain booth includes two 1200 gallon recycling tanks and utilizes a 12 horsepower pump with multi-bank filters capable of delivering 40 to 60 p.s.i. That equates to 300 gallons per minute pushed through the spray heads, or the equivalent of a 24 inch-per-hour downpour!



With nozzles directed at the roof, sidewalls, front and undercarriage, nothing goes untouched in our quest for leak elimination. Using both velocity and volume in our test procedure ensures our valuable customers that we are doing the utmost to deliver a leak-free product to them.



FOREST RIVER BUS

2367 Century Drive • Goshen, Indiana 46528 • 800.348.7440 • www.forestriverinc.com

UNDERCOAT PROCESS INFORMATION

Forest River Bus includes an undercoat application with every vehicle produced. The undercoating protects the unit's most exposed areas from moisture, dirt, grime, salt and other weather-related elements. Trained technicians within two undercoating bays apply the undercoating.

Each vehicle is raised using a drive-on ramp lift system in one of the two undercoating bays. Various areas of the body conversion are masked off including, but not limited to: fuel fills, mud flaps, wheel wells, etc. A rust preventative is also added to the bottom edge of the metal skirts if applicable. A spray foam is applied for additional noise reduction as well as body seam sealing. The underbody is then sprayed with a tough, pliable, corrosion protectant material, which incorporates a sound-deadening property at a pressure of 40 psi. The application runs between 45 minutes to 1.5 hours pending vehicle length.

Forest River Bus follows the strict guidelines established by QVM. No undercoating is sprayed within 12" of the exhaust system or on fuel tank(s), brake lines, AC/heater hoses, heat shield, wire harnesses, driveshaft(s), rear suspension or OEM frame rail.

Undercoating data is available upon request.





FOREST RIVER BUS

2367 Century Drive • Goshen, Indiana 46528 • 800.348.7440 • www.forestriverinc.com

GLAVAL CONCORDE II

COMFORT, QUALITY AND DEPENDABILITY

Built on the rugged F650 chassis, the sleek redesigned Concorde II combines dependability and comfort in a seamless fashion, while giving your customers the option of diesel or gas engines. The Concorde II is the first medium-duty F650 product on the market to be offered in both a 96" or 102" wide body, making cramped aisle space a thing of the past. The wide entry door and deep step treads, spacious headroom and numerous configurations make the Concorde II the perfect fit for any customer. Enjoy the Concorde II's new look and feel, while still receiving Glaval's attention to detail and the industry's most comprehensive 5yr/100K mile warranty.



Glaval Bus
A Division Of Forest River, Inc.

GLAVAL CONCORDE II

Standard Exterior Feature Highlights
- Fully welded corrosion-preventative coated aluminized steel cage construction with laminated sidewall structure meeting all applicable FMVSS requirements
- "Starview" drivers visibility window in front of entry door
- Electric actuated passenger entry door with full length glass
- 36" wide x 36" high upper double T-Slider tempered safety glass windows with climate control tint
- Black powder coated steel rear bumper
- Rear mud flaps
- Molded wheel flares
- Pre-painted white galvanized steel sidewalls and skirts
- Fiberglass front and rear caps
- One-piece seamless FRP (fiberglass reinforced plastic) roof
- Breakaway rearview mirrors with built-in convex
- Sealed LED stop, tail, and turn signal lights with reverse lights
- Exterior LED front and rear marker lights

Standard Interior Feature Highlights
- 93" and 99" interior width
- 96" and 102" exterior width
- 81" interior floor to ceiling height with standard floor
- Black slip resistant Gerflor floor covering
- 5/8" marine tech plywood flooring
- Coved flooring to bottom of seat track
- Gray padded vinyl or cloth interior
- White step nosing at passenger door
- 1.25" left hand vertical passenger assist rail at entry door
- LED entry door step well lights
- LED driver and passenger area lighting
- FlexTech Electrical System
- Backup camera system with 7" monitor/rearview mirror combo
- Non-retractable seat belts

Popular Option Highlights
- Stainless steel wheel inserts
- Luggage storage areas (overhead luggage racks with reading lights, interior luggage racks, rear storage area)
- Rear emergency door with window(s)
- Passenger area rear heat and air conditioning
- Passenger grab rails
- Audio and video systems
- Mid back or high back seating
- ADA and FMVSS compliant wheelchair lifts and securement systems
- Fiberglass sidewalls and skirts



28 Passenger 2 Wheelchair
1 Passenger Foldaway and 2 Passenger Flip Seats
Plus Driver



29 Passenger with Rear Luggage Plus Driver



36 Passenger 2 Wheelchair
1 Passenger Foldaway and 2 Passenger Flip Seats
Plus Driver



37 Passenger Plus Driver



39 Passenger with Rear Luggage Plus Driver



45 Passenger Plus Driver

Glaval Bus
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2367 Century Drive • Goshen, IN 46528 • Lit. No. GLB -06/073119
1.800.348.7440 • www.glavalbus.com

DEALER INFO

Glaval Bus — Pre-Award BUY AMERICA CERTIFICATION

This certifies compliance with FTA Buy America Regulations set forth in 49 C.F.R. § 661.11 for each component that more than 70% of the subcomponents, by cost, are of U.S. origin/manufacture and is manufactured in the U.S. Manufacturer attests that the U.S. content of subcomponents, by cost is as indicated below.

COMPONENT NAME	MANUFACTURER NAME		% U.S. CONTENT	%FOREIGN CONTENT
FORT BEND COUNTY BID 40 PAX F650	Glaval Bus		73.27%	26.73%
SUBCOMPONENT NAME	**MANUFACTURER NAME**	**MFG LOCATION**	**% OF TOTAL**	
Chassis	Ford Motor Co.	U.S.	47.92%	
Rear Bumper	Romeo	U.S.	0.30%	
Exterior Mirrors	ROSCO	U.S.	0.26%	
Electrical System	LGS	U.S.	0.22%	
A/C System	TransAir	U.S.	5.01%	
Floor Heater	ProAir	U.S.	0.19%	
Wheelchair/Rear Door(s)	Challenger Door	U.S.	1.23%	
Wheelchair Lift	Braun	U.S.	2.54%	
Wheelchair Restraints	Q'Straint	U.S.	0.53%	
Seating	Freedman	U.S.	9.39%	
Windows	Starquest	U.S.	0.43%	
Battery Tray	MorRyde	U.S.	0.04%	
Destination Sign	Luminator	U.S.	3.53%	
Bike Rack	Sportworks	U.S.	0.99%	
Farebox	Diamond	U.S.	0.69%	

MAJOR ACTIVITIES UNDERTAKEN AT THE FINAL ASSEMBLY LOCATION

All purchasing of raw and assembled materials including the chassis, fabrication and welding of the frame, prime paint, installation of all wood, fabric, FRP, aluminum and/or other body panel and/or trim materials, installation of doors and windows, HVAC components and systems, electrical systems, installation of any required options such as wheel chair lifts, tie down kits, seats, radios and optional electronic items, if any, complete undercoat, exterior paint and/or graphics if ordered, full road test, rain booth test and all other final quality functions as needed to ensure compliance with the contract.

FINAL ASSEMBLY LOCATION: 2367 CENTURY DRIVE, GOSHEN, IN 46528

BODY V.I.N. OF UNITS DELIVERED UNDER POST DELIVERY BUY AMERICA:

TBD

FINAL ASSEMBLY % OF TOTAL COST NOT INCLUDED IN THE MATERIAL COSTS ABOVE: **2.38%**

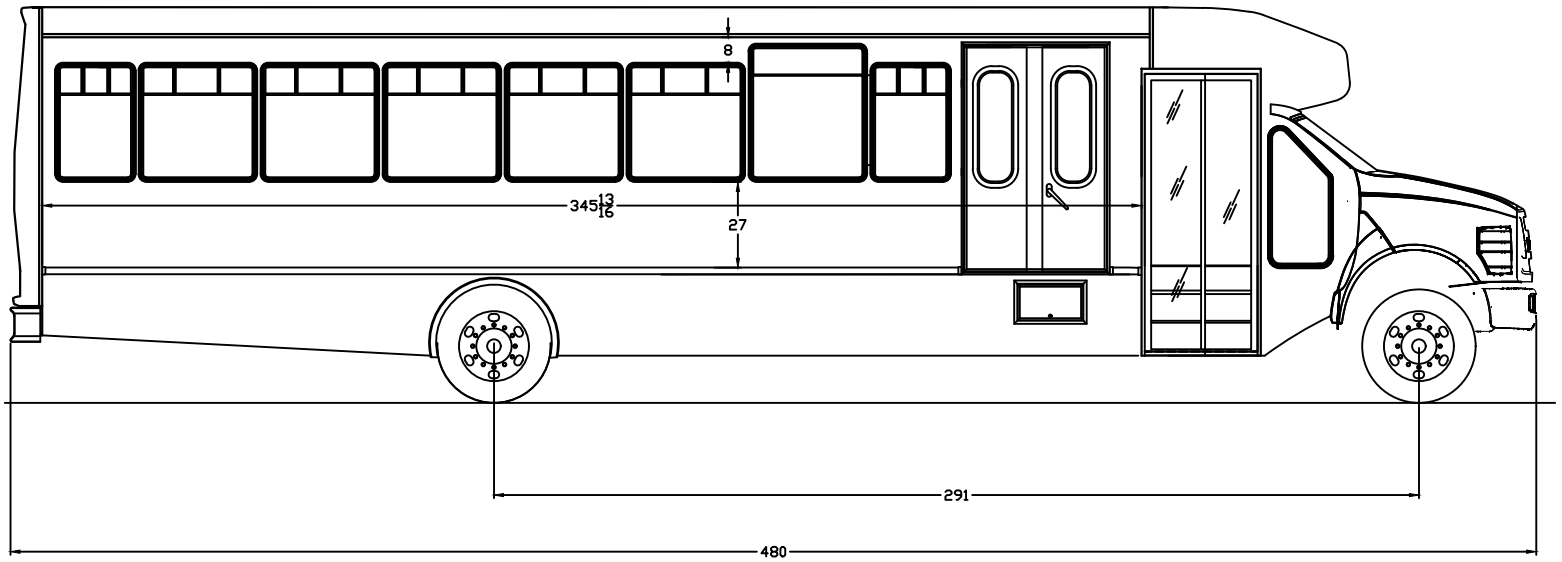
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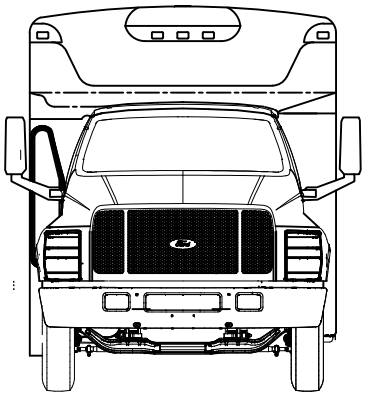
Michael F. Anglemyer
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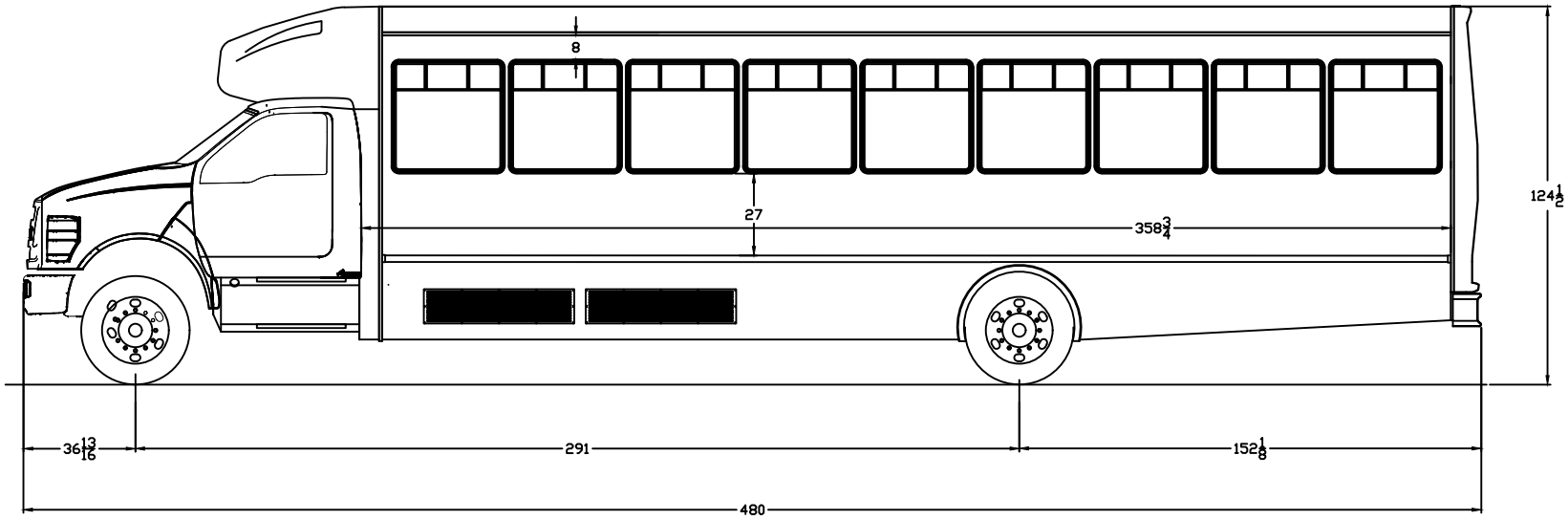
Government Bids
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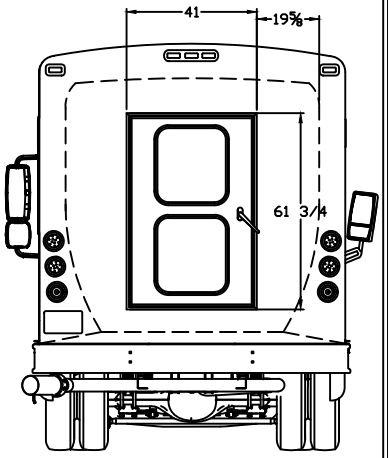
3/14/2022
DATE

Mike Anglemyer
PRINT NAME









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REV. LET.	DESCRIPTION OF CHANGE	BY	CHK	DATE	ECN No.

TOLERANCE UNLESS OTHERWISE SPECIFIED

WOOD	OTHER
± 1/8"	± 1/16"
± 1°	± 1/2°

FOREST RIVER BUS

TITLE: 40' Ford F-650 ELEVATIONS FRONT LIFT

NAME: MK DATE: 03/14/22

DWG. No.

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration U.S. DOT
In accordance with CFR 49, Volume 7, Part 665

Manufacturer:Glaval Bus, A Division of Forest River
Model: Concorde II

Submitted for Testing in Service-Life Category
10 Year /350,000 Miles

MARCH 2017

Report Number: LTI-BT-R1606

The Thomas D. Larson
Pennsylvania Transportation Institute
201 Transportation Research Building
The Pennsylvania State University
University Park, PA 16802
(814) 865-1891

Bus Testing and Research Center
2237 Old Route 220 North
Duncansville, PA 16635
(814) 695-3404

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration U.S. DOT
1200 New Jersey Avenue, SE
Washington, DC 20590

In accordance with CFR 49, Volume 7, Part 665

Manufacturer: Glaval Bus, A Division of Forest River
Manufacturer's address: 914 County Road 1 North Elkhart, IN 46514

Model: Concorde II

Submitted for Testing in Service-Life Category
10 Year /350,000 Miles

Report Number: LTI-BT-R1606

ACCREDITED
Mechanical Testing Certificate 3172.01

Quality Authorization	Director, Bus Research and Testing Center Title	3/7/17 Date

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EXECUTIVE SUMMARY

Glaval Bus, A Division of Forest River submitted a model Concorde II, diesel-powered 41 seat (including the driver) 40-foot bus, for a 10 yr/350,000 mile STURAA test. The odometer reading at the time of delivery was 597 miles. Testing started on March 14, 2016 and was completed on February 17, 2017. The Check-In section of the report provides a description of the bus and specifies its major components.

The primary part of the test program is the Structural Durability Test, which also provides the information for the Maintainability and Reliability results. The Structural Durability Test was started on March 29, 2016 and was completed on February 7, 2017.

The interior of the bus is configured with seating for 41 passengers including the driver. Note: this test bus is not designed to accommodate standing passengers, this results in a potential load of 41 persons. At 150 lbs per person, this load results in a measured gross vehicle weight of 24,330 lbs. The first segment of the Structural Durability Test was performed with the bus loaded to a GVW of 24,330 lbs. The middle seated load weight segment was performed at the same 24,330 lbs and the final segment was performed at a curb weight of 18,160 lbs. Durability driving resulted in unscheduled maintenance and failures that involved a variety of subsystems. A description of failures, and a complete and detailed listing of scheduled and unscheduled maintenance is provided in the Maintainability section of this report.

Effective January 1, 2010 the Federal Transit Administration determined that the total number of simulated passengers used for loading all test vehicles will be based on the full complement of seats and free-floor space available for standing passengers (150 lbs per passenger). The passenger loading used for dynamic testing will not be reduced in order to comply with Gross Axle Weight Ratings (GAWR's) or the Gross Vehicle Weight Ratings (GVWR's) declared by the manufacturer. Cases where the loading exceeds the GAWR and/or the GVWR will be noted accordingly. During the testing program, all test vehicles transported or operated over public roadways will be loaded to comply with the GAWR and GVWR specified by the manufacturer.

Accessibility, in general, was adequate, components covered in Section 1.3 (Repair and/or Replacement of Selected Subsystems) along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted.

The Reliability section compiles failures that occurred during Structural Durability Testing. Breakdowns are classified according to subsystems. The data in this section are arranged so that those subsystems with more frequent problems are apparent. The problems are also listed by class as defined in Section 2. The test bus encountered no Class 1 or Class 2 failures. Of the fourteen reported failures, nine were Class 3 and five were Class 4.

The Safety Test, (a double-lane change, obstacle avoidance test) was safely performed in both right-hand and left-hand directions up to a maximum test speed of 45 mph. The performance of the bus is illustrated by a speed vs. time plot. Acceleration and gradeability test data are provided in Section 4, Performance. The average time to

obtain 50 mph was 22.40 seconds. The Stopping Distance phase of the Brake Test was completed with the following results; for the Uniform High Friction Test average stopping distances were 22.34' at 20 mph, 46.48' at 30 mph, 85.15' at 40 mph and 104.42' at 45 mph. The average stopping distance for the Uniform Low Friction Test was 26.59'. There was no deviation from the test lane during the performance of the Stopping Distance phase. During the Stability phase of Brake Testing the test bus experienced no deviation from the test lane. The Parking Brake phase was completed with the test bus maintaining the parked position for the full five minute period with no slip or roll observed in both the uphill and downhill positions.

The Shakedown Test produced a maximum final loaded deflection of 0.149 inches with a permanent set ranging between -0.004 to 0.001 inches under a distributed static load of 15,375 lbs. The Distortion Test was completed with all subsystems, doors and escape mechanisms operating properly. No water leakage was observed throughout the test. All subsystems operated properly.

The Static Towing Test was performed using a target load (towing force) of 21,792 lbs. All four front pulls were completed to the full test load with no damage or deformation observed. The Dynamic Towing Test was performed by means of a front-lift tow. The towing interface was accomplished using a hydraulic under-lift wrecker. The bus was towed without incident and no damage resulted from the test. The manufacturer does not recommend towing the bus from the rear, therefore, a rear test was not performed. The Jacking and Hoisting Tests were also performed without incident. The bus was found to be stable on the jack stands, and the minimum jacking clearance observed with a tire deflated was 5.5 inches.

A Fuel Economy Test was run on simulated central business district, arterial, and commuter courses. The results were 4.84 mpg, 5.16 mpg, and 9.37 mpg respectively; with an overall average of 5.73 mpg.

A series of Interior and Exterior Noise Tests was performed. These data are listed in Section 7.1 and 7.2 respectively.

The Emissions Test was performed. These results are available in Section 8 of this report.

ABBREVIATIONS

ABTC	-	Altoona Bus Test Center
A/C	-	air conditioner
ADB	-	advance design bus
ATA-MC	-	The Maintenance Council of the American Trucking Association
CBD	-	central business district
CW	-	curb weight (bus weight including maximum fuel, oil, and coolant; but without passengers or driver)
dB(A)	-	decibels with reference to 0.0002 microbar as measured on the "A" scale
DIR	-	test director
DR	-	bus driver
EPA	-	Environmental Protection Agency
FFS	-	free floor space (floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area)
GVL	-	gross vehicle load (150 lb for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space)
GVW	-	gross vehicle weight (curb weight plus gross vehicle load)
GVWR	-	gross vehicle weight rating
MECH	-	bus mechanic
mpg	-	miles per gallon
mph	-	miles per hour
PM	-	Preventive maintenance
PSTT	-	Penn State Test Track
PTI	-	Pennsylvania Transportation Institute
rpm	-	revolutions per minute
SAE	-	Society of Automotive Engineers
SCH	-	test scheduler
SA	-	staff assistant
SLW	-	seated load weight (curb weight plus 150 lb for every designed passenger seating position and for the driver)
STURAA	-	Surface Transportation and Uniform Relocation Assistance Act
TD	-	test driver
TECH	-	test technician
TM	-	track manager
TP	-	test personnel

TEST BUS CHECK-IN

I. OBJECTIVE

The objective of this task is to log in the test bus, assign a bus number, complete the vehicle data form, and perform a safety check.

II. TEST DESCRIPTION

The test consists of assigning a bus test number to the bus, cleaning the bus, completing the vehicle data form, obtaining any special information and tools from the manufacturer, determining a testing schedule, performing an initial safety check, and performing the manufacturer's recommended preventive maintenance. The bus manufacturer must certify that the bus meets all Federal regulations.

III. DISCUSSION

The check-in procedure is used to identify in detail the major components and configuration of the bus.

The test bus consists of a Glaval Bus, A Division of Forest River, model Concorde II. The bus has an OEM driver’s door and a cab passenger door rear the front axle. The passenger entry door is located rear of the cab passenger door and a rear cargo door is centered at the rear of the bus. Power is provided by a diesel-fueled, Ford model 6.7 L Powerstroke engine coupled to a Ford model Tourqueshift 6 transmission.

The measured curb weight is 7,890 lbs for the front axle and 10,270 lbs for the rear axle. These combined weights provide a total measured curb weight of 18,160 lbs. There are 41 seats including the driver. Note: this test bus is not designed for standing passengers therefore the total passenger capacity is 41. Gross load is 150 lb x 41 = 6,150 lbs. At full capacity, the measured gross vehicle weight is 24,330 lbs

Bus Number: 1606	Date: 3-14-16
Bus Manufacturer: Glaval Bus, A Division of Forest River	Vehicle Identification Number (VIN): 1FDNF6DC8GDA00256
Model Number: Concorde II	Chassis Mfr./Mod.#: Ford / F-650 Super Duty
Personnel: E.D. & S.R.	Starting Odometer Reading: 597

WEIGHT:

Individual Wheel Reactions:

Weights (lb)	Front Axle		Middle Axle		Rear Axle	
	Curb	Street	Curb	Street	Curb	Street
CW	3,890	4,000	N/A	N/A	5,120	5,150
SLW	4,250	4,430	N/A	N/A	7,780	7,870
GVW	4,250	4,430	N/A	N/A	7,780	7,870

Total Weight Details:

Weight (lb)	CW	SLW	GVW	GAWR
Front Axle	7,890	8,680	8,680	10,000
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	10,270	15,650	15,650	19,000
Total	18,160	24,330	24,330	GVWR: 25,999

Dimensions:

Length (ft/in)	40 / 5.75
Width (in)	102.0
Height (in)	129.0
Front Overhang (in)	37.75
Rear Overhang (in)	166.0
Wheel Base (in)	282.0
Wheel Track (in)	Front: 81.7
	Middle: N/A
	Rear: 72.6

Bus Number: 1606	Date: 3-14-16

CLEARANCES:

Lowest Point Outside Front Axle	Location: Sway bar bracket Clearance(in): 15.1
Lowest Point Outside Rear Axle	Location: Exhaust clamp Clearance(in): 20.0
Lowest Point between Axles	Location: Stepwell Clearance(in): 11.5
Ground Clearance at the center (in)	16.0
Front Approach Angle (deg)	25.1
Rear Approach Angle (deg)	7.4
Ramp Clearance Angle (deg)	4.6
Aisle Width (in)	Front – 17.2 Rear – 18.1
Inside Standing Height at Center Aisle (in)	80.6

BODY DETAILS:

Body Structural Type	Integral		
Frame Material	Steel		
Body Material	Steel		
Floor Material	Plywood		
Roof Material	Composite		
Windows Type	■ Fixed	■ Movable	
Window Mfg./Model No.	Cleer Vision Windows / AS3 DOT 960 Z-206.1-1996		
Number of Doors	_2_ Front	_1_ Rear	_1_ Passenger
Mfr. / Model No.	Ford / OEM	Glaval Bus / N/A	A&MSystems / 143287A1G4
Dimension of Each Door (in)	Driver – 32.4 x 47.3 Pass cab – 47.3 x 33.5	Rear – 70.2 x 34.2	Pass – 87.2 x 26.2
Passenger Seat Type	☐ Cantilever	■ Pedestal	☐ Other (explain)
Driver Seat Type	■ Air	☐ Spring	☐ Other (explain)
Mfr. / Model No.	Ford / OEM		
Number of Seats (including Driver)	41		

Bus Number: 1606	Date: 3-14-16

BODY DETAILS (Contd..)

Free Floor Space (ft^2)	33.8			
Height of Each Step at Normal Position (in)	Front 1. 14.1	2. 9.6	3. 9.5	4. 9.6
	Middle 1. N/A	2. N/A	3. N/A	4. N/A
	Rear 1. N/A	2. N/A	3. N/A	4. N/A
Step Elevation Change - Kneeling (in)	N/A			

ENGINE

Type	■ C.I.	☐ Alternate Fuel	
	☐ S.I.	☐ Other (explain)	
Mfr. / Model No.	Ford Motor Co. / Ford 6.7 L Powerstroke		
Location	■ Front	☐ Rear	☐ Other (explain)
Fuel Type	☐ Gasoline	☐ CNG	☐ Methanol
	■ Diesel	☐ LNG	☐ Other (explain)
Alternator (Generator) Mfr. / Model No.	Ford / 157 & 200 Amp Dual		
Maximum Rated Output (Volts / Amps)	24 / 200		
Air Compressor Mfr. / Model No.	Bendix / 2TU-FLO 550		
Maximum Capacity (ft^3 / min)	13.2		
Starter Type	■ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Ford Motor Co. / OEM		

Bus Number: 1606	Date: 3-14-16

TRANSMISSION

Transmission Type	☐ Manual	■ Automatic	☐ Load Sensing Adaptive
Mfr. / Model No.	Ford Motor Co. / Torqueshift 6		
Control Type	■ Mechanical	☐ Electrical	☐ Other
Integral Retarder	☐ Yes	■ No	

SUSPENSION

Number of Axles	2		
Front Axle Type	☐ Independent	■ Beam Axle	
Mfr. / Model No.	Spicer / OEM		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	■ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Sachs / F044-18045-BB		
Middle Axle Type	☐ Independent	☐ Beam Axle	
Mfr. / Model No.	N/A		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	N/A		
Mfr. / Model No.	N/A		
Rear Axle Type	☐ Independent	■ Beam Axle	
Mfr. / Model No.	Spicer / OEM		
Axle Ratio (if driven)	4.29		
Suspension Type	■ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Hendrickson / 015186/60670-11/10679		

Bus Number: 1606	Date: 3-14-16

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Hayes Lemmer / 22.5 x 7.50
	Tire Mfr./ Model No.	Goodyear G661 / 255 70R/22.5
Rear	Wheel Mfr./ Model No.	Hayes Lemmer / 22.5 x 7.50
	Tire Mfr./ Model No.	Goodyear G661 / 255 70R/22.5

BRAKES

Front Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Meritor / 60450478006		
Middle Axle Brakes Type	☐ Cam	☐ Disc	☐ Other (explain)
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Meritor / N/A		

HVAC

Heating System Type	☐ Air	■ Water	☐ Other
Capacity (Btu/hr)	132,000		
Mfr. / Model No.	Pro-Air / (2) 65K Floor Heaters		
Air Conditioner	■ Yes	☐ No	
Location	2 – Roof		
Capacity (Btu/hr)	310 / CFM		
A/C Compressor Mfr. / Model No.	Que-QP21-1667 / 21NG0928		TCCI / 51H7PQ / NG27184

STEERING

Steering Gear Box Type	Hydraulic gear		
Mfr. / Model No.	Ford Motor Co. /OEM		
Steering Wheel Diameter	17.3		
Number of turns (lock to lock)	4.25		
Control Type	☐ Electric	■ Hydraulic	☐ Other (expain)

Bus Number: 1606	Date: 3-14-16

OTHERS

Wheel Chair Ramps	Location: N/A	Type: N/A
Wheel Chair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	N/A	
Emergency Exit	Location: Windows Doors Roof hatch	Number: 3 3 1

CAPACITIES

Fuel Tank Capacity (gallons)	65
Engine Crankcase Capacity (gallons)	Unknown Fill to Line
Transmission Capacity (gallons)	Unknown Fill to Line
Differential Capacity (gallons)	Unknown
Cooling System Capacity (gallons)	Unknown Fill to Line
Power Steering Fluid Capacity (quarts)	Unknown Fill to Line

VEHICLE DATA FORM

Bus Number: 1606	Date: 3-14-16

List all spare parts, tools and manuals delivered with the bus.

Part Number	Description	Qty.
N/A	Tires & rims	6
FA-1923	Air filter	2
Fl-2051S	Oil Filter	2
FT-187	Transmission filter	2
JK8-1403-FC4Z-8620-F	Belt	1
JK4-326-A	Belt	1
FC4Z-18124-A	Shock	2
FC4Z-18125-D	Shock	2

COMPONENT/SUBSYSTEM INSPECTION FORM

Bus Number: 1606	Date: 3-14-16

Subsystem	Checked	Initials	Comments
Air Conditioning Heating and Ventilation	✓	E.D.	N/A
Body and Sheet Metal	✓	E.D.	N/A
Frame	✓	E.D.	N/A
Steering	✓	E.D.	N/A
Suspension	✓	E.D.	N/A
Interior/Seating	✓	E.D.	N/A
Axles	✓	E.D.	N/A
Brakes	✓	S.R.	N/A
Tires/Wheels	✓	S.R.	N/A
Exhaust	✓	S.R.	N/A
Fuel System	✓	S.R.	N/A
Power Plant	✓	S.R.	N/A
Accessories	✓	S.R.	N/A
Lift System	✓	S.R.	N/A
Interior Fasteners	✓	S.R.	N/A
Batteries	✓	S.R.	N/A

CHECK - IN



GLAVAL BUS, A DIVISION OF FOREST RIVER
MODEL CONCORDE II



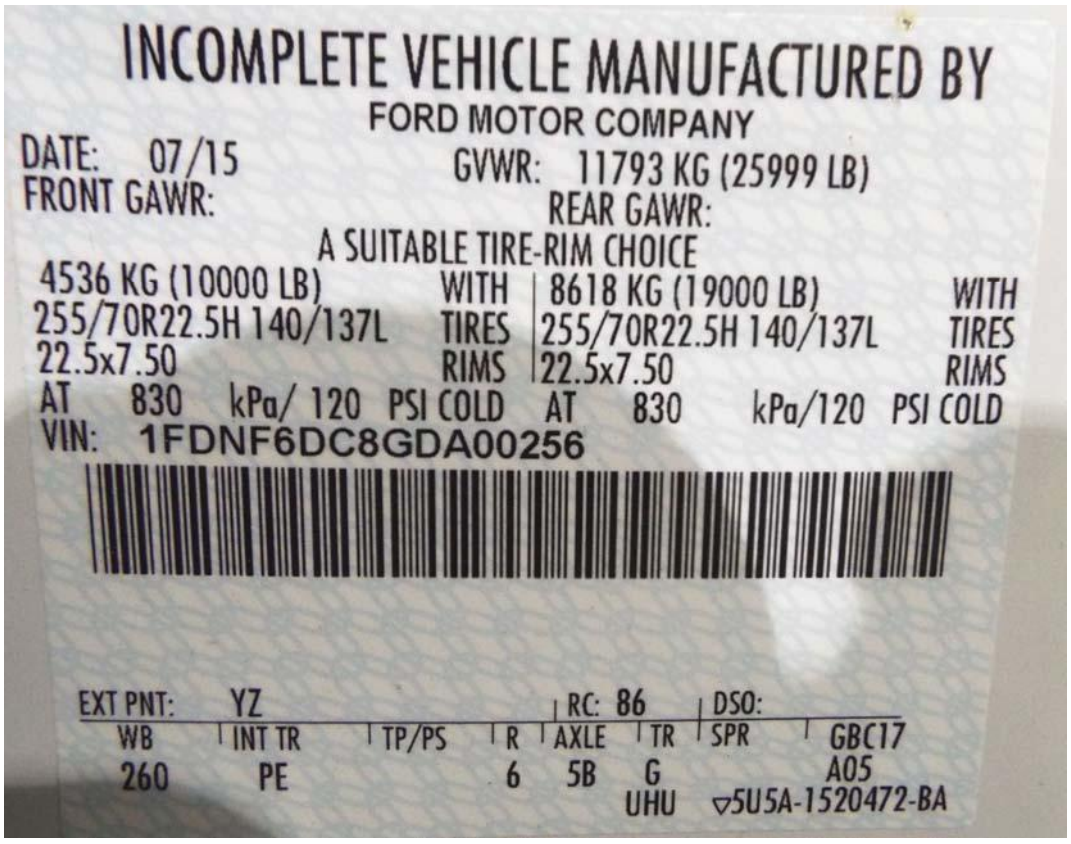
CHECK - IN CONT.



GLAVAL BUS, A DIVISION OF FOREST RIVER
MODEL CONCORDE II



CHECK - IN CONT.



VIN TAG



OPERATOR'S AREA

CHECK - IN CONT.



INTERIOR
FRONT TO REAR



INTERIOR
REAR TO FRONT

CHECK - IN CONT.



ENGINE COMPARTMENT



1. MAINTAINABILITY

1.1 ACCESSIBILITY OF COMPONENTS AND SUBSYSTEMS

1.1-I. TEST OBJECTIVE

The objective of this test is to check the accessibility of components and subsystems.

1.1-II. TEST DESCRIPTION

Accessibility of components and subsystems is checked, and where accessibility is restricted the subsystem is noted along with the reason for the restriction.

1.1-III. DISCUSSION

Accessibility, in general, was adequate. Components covered in Section 1.3 (repair and/or replacement of selected subsystems), along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted.

ACCESSIBILITY DATA FORM

Bus Number: 1606	Date: 02-08-17

Component	Checked	Comments
ENGINE :		
Oil Dipstick	✓	None Noted
Oil Filler Hole	✓	None Noted
Oil Drain Plug	✓	None Noted
Oil Filter	✓	None Noted
Fuel Filter	✓	None Noted
Air Filter	✓	None Noted
Belts	✓	None Noted
Coolant Level	✓	None Noted
Coolant Filler Hole	✓	None Noted
Coolant Drain	✓	None Noted
Spark / Glow Plugs	✓	None Noted
Alternator	✓	None Noted
Diagnostic Interface Connector	✓	None Noted
TRANSMISSION :		
Fluid Dip-Stick	✓	None Noted
Filler Hole	✓	None Noted
Drain Plug	✓	None Noted
SUSPENSION :		
Bushings	✓	None Noted
Shock Absorbers	✓	None Noted
Air Springs	✓	None Noted
Leveling Valves	✓	None Noted
Grease Fittings	✓	None Noted

ACCESSIBILITY DATA FORM

Bus Number: 1606	Date: 02-08-17

Component	Checked	Comments
HVAC :		
A/C Compressor	✓	None Noted
Filters	✓	None Noted
Fans	✓	None Noted
ELECTRICAL SYSTEM :		
Fuses	✓	None Noted
Batteries	✓	None Noted
Voltage regulator	✓	None Noted
Voltage Converters	**N/A**	None Noted
Lighting	✓	None Noted
MISCELLANEOUS :		
Brakes	✓	None Noted
Handicap Lifts/Ramps	**N/A**	None Noted
Instruments	✓	None Noted
Axles	✓	None Noted
Exhaust	✓	None Noted
Fuel System	✓	None Noted
OTHERS :		N/A

1.2 SERVICING, PREVENTIVE MAINTENANCE, AND REPAIR AND MAINTENANCE DURING TESTING

1.2-I. TEST OBJECTIVE

The objective of this test is to collect maintenance data about the servicing, preventive maintenance, and repair.

1.2.-II. TEST DESCRIPTION

The test will be conducted by operating the NBM and collecting the following data on work order forms and a driver log.

1. Unscheduled Maintenance
    a. Bus number
    b. Date
    c. Mileage
    d. Description of malfunction
    e. Location of malfunction (e.g., in service or undergoing inspection)
    f. Repair action and parts used
    g. Man-hours required

2. Scheduled Maintenance
    a. Bus number
    b. Date
    c. Mileage
    d. Engine running time (if available)
    e. Results of scheduled inspections
    f. Description of malfunction (if any)
    g. Repair action and parts used (if any)
    h. Man-hours required

The buses will be operated in accelerated durability service. While typical items are given below, the specific service schedule will be that specified by the manufacturer.

A. Service
    1. Fueling
    2. Consumable checks
    3. Interior cleaning

B. Preventive Maintenance
    1. Brake adjustments
    2. Lubrication
    3. 3,000 mi (or equivalent) inspection

4. Oil and filter change inspection
5. Major inspection
6. Tune-up

C. Periodic Repairs
1. Brake reline
2. Transmission change
3. Engine change
4. Windshield wiper motor change
5. Stoplight bulb change
6. Towing operations
7. Hoisting operations

1.2-III. DISCUSSION

Servicing and preventive maintenance were performed at manufacturer-specified intervals. The following Scheduled Maintenance Form lists the mileage, items serviced, the service interval, and amount of time required to perform the maintenance. Finally, the Unscheduled Maintenance List along with Unscheduled Maintenance-related photographs is included in Section 5.7, Structural Durability. This list supplies information related to failures that occurred during the durability portion of testing. The Unscheduled Maintenance List includes the date and mileage at which the malfunction occurred, a description of the malfunction and repair, and the time required to perform the repair.

(Page 1 of 2)
SCHEDULED MAINTENANCE
GLAVAL Bus #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
04-15-16	1,386	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
07-06-16	2,273	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
08-15-16	3,034	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
09-06-16	4,150	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
09-26-16	5,878	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-09-16	7,002	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-16-16	8,217	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
01-06-17	10,664	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
01-25-16	11,146	P.M./Inspection Fuel Economy Prep	Linkage, tie rods, universals/u-joints all lubed. Oil changed. Oil, fuel, and air filters changed. Transmission oil and filter changed.	8.00	8.00

(Page 2 of 2)
SCHEDULED MAINTENANCE
GLAVAL Bus #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
02-03-17	11,249	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

1.3-I. TEST OBJECTIVE

The objective of this test is to establish the time required to replace and/or repair selected subsystems.

1.3-II. TEST DESCRIPTION

The test will involve components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that fails during the NBM testing is added to this list. Components to be included are:

1. Transmission
2. Alternator
3. Starter
4. Batteries
5. Windshield wiper motor

1.3-III. DISCUSSION

During the test, several additional components were removed for repair or replacement. Following is a list of components and total repair/replacement time.

	MAN HOURS
Rear bumper step replaced, weled/repaired.	3.0
Fuel tank replaced.	6.0
Lower radiator hose modification.	3.0
Front sway bar.	2.0
A/C compressor replaced, evac. & charge.	8.0
Both rear shocks.	4.0

At the end of the test, the remaining items on the list were removed and replaced. The transmission assembly took 16.0 man-hours (two men 8.0 hrs) to remove and replace. The time required for repair/replacement of the four remaining components is given on the following Repair and/or Replacement Form.

REPLACEMENT AND/OR REPAIR FORM

Subsystem	Replacement Time
Transmission	16.0 man hours
Wiper Motor	1.0 man hours
Starter	1.5 man hours
Alternator	3.0 man hours
Batteries	1.0 man hours

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS



TRANSMISSION REMOVAL AND REPLACEMENT (16.0 MAN HOURS)



WIPER MOTOR REMOVAL AND REPLACEMENT (1.0 MAN HOURS)

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.



STARTER REMOVAL AND REPLACEMENT
(1.5 MAN HOURS)



ALTERNATOR X2 REMOVAL AND REPLACEMENT
(3.0 MAN HOURS)

2. RELIABILITY - DOCUMENTATION OF BREAKDOWN AND REPAIR TIMES DURING TESTING

2-I. TEST OBJECTIVE

The objective of this test is to document unscheduled breakdowns, repairs, down time, and repair time that occur during testing.

2-II. TEST DESCRIPTION

Using the driver log and unscheduled work order forms, all significant breakdowns, repairs, man-hours to repair, and hours out of service are recorded on the Reliability Data Form.

CLASS OF FAILURES

Classes of failures are described below:

(a) Class 1: Physical Safety. A failure that could lead directly to passenger or driver injury and represents a severe crash situation.

(b) Class 2: Road Call. A failure resulting in an en route interruption of revenue service. Service is discontinued until the bus is replaced or repaired at the point of failure.

(c) Class 3: Bus Change. A failure that requires removal of the bus from service during its assignments. The bus is operable to a rendezvous point with a replacement bus.

(d) Class 4: Bad Order. A failure that does not require removal of the bus from service during its assignments but does degrade coach operation. The failure shall be reported by driver, inspector, or hostler.

2-III. DISCUSSION

A listing of breakdowns and unscheduled repairs is accumulated during the Structural Durability Test. The following Reliability Data Form lists all unscheduled repairs under classes as defined above. These classifications are somewhat subjective as the test is performed on a test track with careful inspections every two hours. However, even on the road, there is considerable latitude on deciding how to handle many failures.

The Unscheduled Repair List is also attached to provide a reference for the repairs that are included in the Reliability Data Forms.

The classification of repairs according to subsystem is intended to emphasize those systems which had persistent minor or more serious problems. There were no Class 1 or 2 failures. Of the nine Class 3 failures, two each occurred in the cooling system, suspension and electrical system. One each involved the body, air conditioning and fuel system. These, and the remaining five Class 4 failures are available for review in the Unscheduled Maintenance List, located in Section 5.7 Structural Durability.

RELIABILITY DATA FORM

Bus Number: 1606	Date Completed: 1-25-17
Personnel: B.R.	

	Failure Type					
	Class 4 Bad order	Class 3 Bus Change	Class 2 Road Call	Class 1 Physical Safety		
Subsystem	Mileage	Mileage	Mileage	Mileage	Man hours	Down Time
Body	2,273				3.0	12.0
	9,863				1.0	4.0
		10,411			2.0	2.0
Cooling system		1,528			16.0	240.0
	2,860				3.0	3.0
		9,863			4.0	16.0
Suspension		5,782			2.0	16.0
	10,664				4.0	6.0
		10,664			2.0	6.0
Air conditioning		5,873*			2.0	2.0
		5,929*			8.0	288.0
Electrical		638			2.0	2.0
		4,160			2.0	72.0
Exhaust	7,002				2.0	2.0
Fuel System		2,860			6.0	320.0

*** Combined as 1 failure.**

3. SAFETY - A DOUBLE-LANE CHANGE (OBSTACLE AVOIDANCE)

3-I. TEST OBJECTIVE

The objective of this test is to determine handling and stability of the bus by measuring speed through a double lane change test.

3-II. TEST DESCRIPTION

The Safety Test is a vehicle handling and stability test. The bus will be operated at SLW on a smooth and level test track. The bus will be driven through a double lane change course at increasing speed until the test is considered unsafe or a speed of 45 mph is reached. The lane change course will be set up using pylons to mark off two 12 foot center to center lanes with two 100 foot lane change areas 100 feet apart. The bus will begin in one lane, change to the other lane in a 100 foot span, travel 100 feet, and return to the original lane in another 100 foot span. This procedure will be repeated, starting first in the right-hand and then in the left-hand lane.

3-III. DISCUSSION

The double-lane change was performed in both right-hand and left-hand directions. The bus was able to safely negotiate the test course in both the right-hand and left-hand directions up to the maximum test speed of 45 mph.

SAFETY DATA FORM

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	

Temperature (°F): 33	Humidity (%): 67
Wind Direction: N	Wind Speed (mph): Calm
Barometric Pressure (in.Hg): 30.20	

SAFETY TEST: DOUBLE LANE CHANGE	
Maximum safe speed tested for double-lane change to left	45 mph
Maximum safe speed tested for double-lane change to right	45 mph
Comments of the position of the bus during the lane change:	
The vehicle maintained a safe profile through all portions of testing.	
Comments of the tire/ground contact patch:	
The vehicle maintained the tire/ground patch through all portions of testing.	



RIGHT - HAND APPROACH



LEFT - HAND APPROACH

4.0 PERFORMANCE

4.1 PERFORMANCE - AN ACCELERATION, GRADEABILITY, AND TOP SPEED TEST

4.1-I. TEST OBJECTIVE

The objective of this test is to determine the acceleration, gradeability, and top speed capabilities of the bus.

4.1-II. TEST DESCRIPTION

In this test, the bus will be operated at SLW on the skid pad at the PSBRTF. The bus will be accelerated at full throttle from a standstill to a maximum "geared" or "safe" speed as determined by the test driver. The vehicle speed is measured using a Correvit non-contacting speed sensor. The times to reach speed between ten mile per hour increments are measured and recorded using a stopwatch with a lap timer. The time to speed data will be recorded on the Performance Data Form and later used to generate a speed vs. time plot and gradeability calculations.

4.1-III. DISCUSSION

This test consists of three runs in both the clockwise and counterclockwise directions on the Test Track. Velocity versus time data is obtained for each run and results are averaged together to minimize any test variability which might be introduced by wind or other external factors. The test was performed up to a maximum speed of 50 mph. The fitted curve of velocity vs. time is attached, followed by the calculated gradeability results. The average time to obtain 50 mph was 22.40 seconds.

PERFORMANCE DATA FORM

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	

Temperature (°F): 32	Humidity (%): 67
Wind Direction: NNE	Wind Speed (mph): Calm
Barometric Pressure (in.Hg): 30.20	

		INITIALS:
Air Conditioning - OFF	✓Checked	S.R.
Ventilation fans - ON HIGH	✓Checked	S.R.
Heater pump motor - OFF	✓Checked	S.R.
Defroster - OFF	✓ Checked	S.R.
Exterior and interior lights - ON	✓ Checked	S.R.
Windows and doors - CLOSED	✓ Checked	S.R.

ACCELERATION, GRADEABILITY, TOP SPEED

Counter Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	2.62	2.65	2.52
20 mph	5.46	4.99	4.85
30 mph	8.89	8.61	8.56
40 mph	14.65	14.32	14.09
Top Test Speed(mph) 50	24.11	23.39	23.23

Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	2.29	2.39	2.69
20 mph	4.51	4.80	4.88
30 mph	7.83	8.36	8.47
40 mph	13.34	13.71	13.85
Top Test Speed(mph) 50	21.07	21.27	21.31

PERFORMANCE SUMMARY SHEET

BUS MANUFACTURER :Glaval Bus
BUS MODEL :Concorde II
BUS NUMBER :1606
TEST DATE :01-16-17

TEST CONDITIONS :

TEMPERATURE (DEG F) : 32.0
WIND DIRECTION : NNE
WIND SPEED (MPH) : .0
HUMIDITY (%) : 67
BAROMETRIC PRESSURE (IN. HG) : 30.2

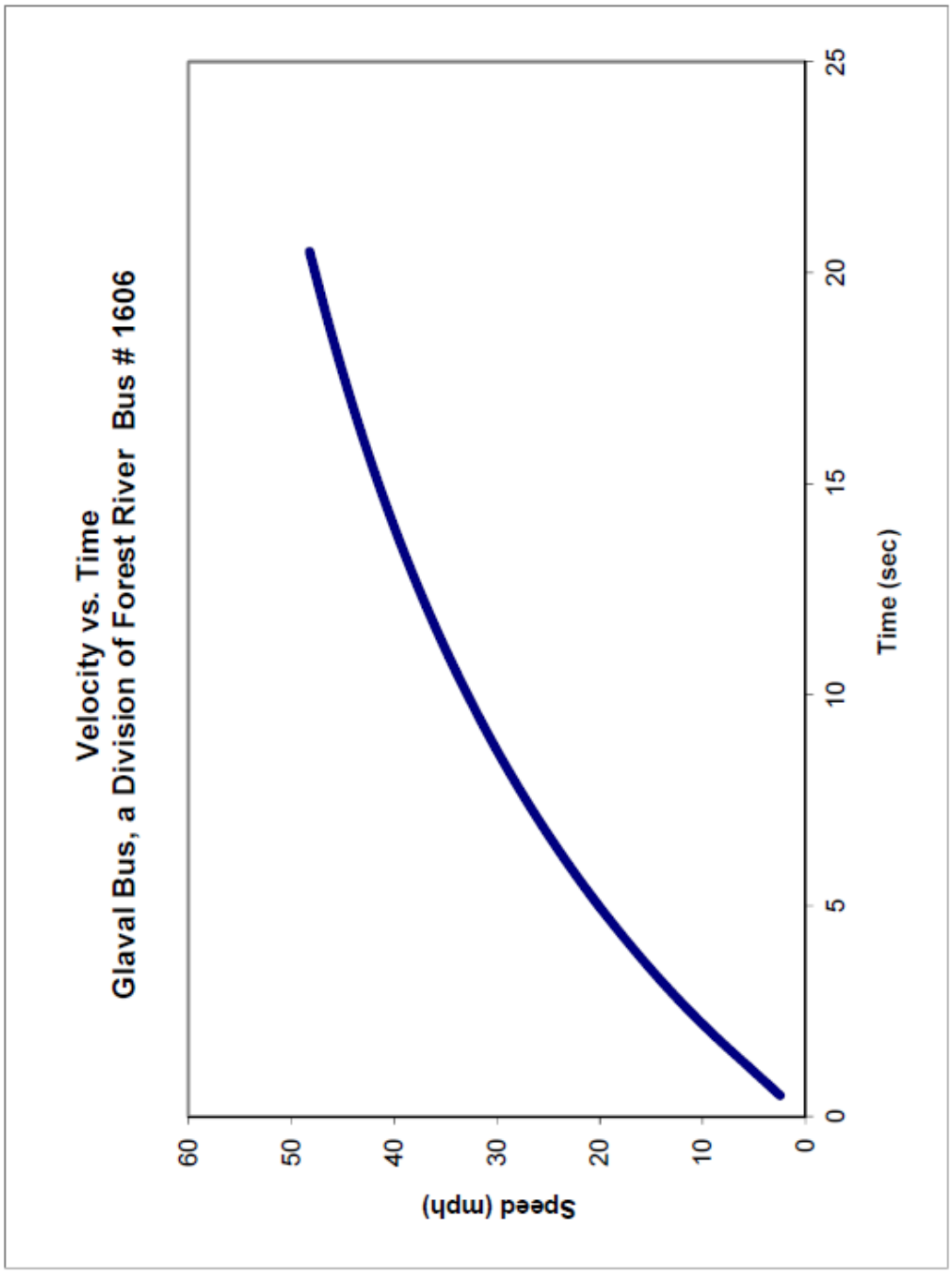
VEHICLE SPEED	AVERAGE TIME (SEC)		
(MPH)	CCW DIRECTION	CW DIRECTION	TOTAL
10.0	2.60	2.46	2.53
20.0	5.10	4.73	4.92
30.0	8.69	8.22	8.45
40.0	14.35	13.63	13.99
50.0	23.58	21.22	22.40

TEST SUMMARY :

VEHICLE SPEED (MPH)	TIME (SEC)	ACCELERATION (FT/SEC^2)	MAX. GRADE (%)
1.0	.20	7.3	23.4
5.0	1.03	6.7	21.4
10.0	2.18	6.0	19.0
15.0	3.48	5.3	16.7
20.0	4.96	4.6	14.5
25.0	6.67	4.0	12.4
30.0	8.68	3.4	10.5
35.0	11.07	2.8	8.7
40.0	13.98	2.3	7.1
45.0	17.62	1.8	5.6
50.0	22.33	1.4	4.2

NOTE : Gradeability results were calculated from performance
---- test data. Actual sustained gradeability performance
for vehicles equipped with auto transmission may be
lower than the values indicated here.

Velocity Curve



4.0 PERFORMANCE

4.2 Performance - Bus Braking

4.2 I. TEST OBJECTIVE

The objective of this test is to provide, for comparison purposes, braking performance data on transit buses produced by different manufacturers.

4.2 II. TEST DESCRIPTION

The testing will be conducted at the PTI Test Track skid pad area. Brake tests will be conducted after completion of the GVW portion of the vehicle durability test. At this point in testing the brakes have been subjected to a large number of braking snubs and will be considered well burnished. Testing will be performed when the bus is fully loaded at its GVW. All tires on each bus must be representative of the tires on the production model vehicle

The brake testing procedure comprises three phases:

1. Stopping distance tests

    i. Dry surface (high-friction, Skid Number within the range of 70-76)
    ii. Wet surface (low-friction, Skid Number within the range of 30-36)

2. Stability tests
3. Parking brake test

Stopping Distance Tests

The stopping distance phase will evaluate service brake stops. All stopping distance tests on dry surface will be performed in a straight line and at the speeds of 20, 30, 40 and 45 mph. All stopping distance tests on wet surface will be performed in straight line at speed of 20 mph.

The tests will be conducted as follows:

1. **Uniform High Friction Tests:** Four maximum deceleration straight-line brake applications each at 20, 30, 40 and 45 mph, to a full stop on a uniform high-friction surface in a 3.66-m (12-ft) wide lane.

2. **Uniform Low Friction Tests:** Four maximum deceleration straight-line brake applications from 20 mph on a uniform low friction surface in a 3.66-m (12-ft) wide lane.

When performing service brake stops for both cases, the test vehicle is accelerated on the bus test lane to the speed specified in the test procedure and this speed is maintained into the skid pad area. Upon entry of the appropriate lane of the skid pad area, the vehicle's service brake is applied to stop the vehicle as quickly as possible. The stopping distance is measured and recorded for both cases on the test

data form. Stopping distance results on dry and wet surfaces will be recorded and the average of the four measured stopping distances will be considered as the measured stopping distance. Any deviation from the test lane will be recorded.

Stability Tests

This test will be conducted in both directions on the test track. The test consists of four maximum deceleration, straight-line brake applications on a surface with split coefficients of friction (i.e., the wheels on one side run on high-friction SN 70-76 or more and the other side on low-friction [where the lower coefficient of friction should be less than half of the high one] at initial speed of 30 mph).

(I) The performance of the vehicle will be evaluated to determine if it is possible to keep the vehicle within a 3.66m (12 ft) wide lane, with the dividing line between the two surfaces in the lane's center. The steering wheel input angle required to keep the vehicle in the lane during the maneuver will be reported.

Parking Brake Test

The parking brake phase utilizes the brake slope, which has a 20% grade. The test vehicle, at its GVW, is driven onto the brake slope and stopped. With the transmission in neutral, the parking brake is applied and the service brake is released. The test vehicle is required to remain stationary for five minutes. The parking brake test is performed with the vehicle facing uphill and downhill.

4.2-III. DISCUSSION

The Stopping Distance phase of the Brake Test was completed with the following results; for the Uniform High Friction Test average stopping distances were 22.34' at 20 mph, 46.48' at 30 mph, 85.15' at 40 mph and 104.42' at 45 mph. The average stopping distance for the Uniform Low Friction Test was 26.59' There was no deviation from the test lane during the performance of the Stopping Distance phase.

During the Stability phase of Brake Testing the test bus experienced no deviation from the test lane during both approaches to the Split Friction Road surface.

The Parking Brake phase was completed with the test bus maintaining the parked position for the full five minute period with no slip or roll observed in both the uphill and downhill positions.

Table 4.2-6. Braking Test Data Forms

Bus Number: 1606	Date: 10-26-16
Personnel: S.R., E.D., P.D. & M.H.	
Amb. Temperature (°F): 36	Wind Speed (mph): 2
Wind Direction: NNE	Pavement Temp (°F) Start: 48 End: 54

TIRE INFLATION PRESSURE (psi):

Tire Type: Front: Goodyear/G661 Rear: Goodyear/G661

	Left Tire(s)		Right Tire(s)	
Front	120		120	
	Inner	Outer	Inner	Outer
Rear	N/A	N/A	N/A	N/A
Rear	120	120	120	120

AXLE LOADS (lb)

	Left	Right
Front	4,430	4,250
Rear	N/A	N/A
Rear	7,870	7,780

Table 4.2-7. Record of All Braking System Faults/Repairs.

Date	Fault/Repair	Description
10-26-16	None noted.	None noted.

Table 4.2-8.1. Stopping Distance Test Results Form

Stopping Distance (ft)					
Vehicle Direction	CW	CW	CCW	CCW	
Speed (mph)	**Stop 1**	**Stop 2**	**Stop 3**	**Stop 4**	**Average**
20 (dry)	21.74	21.38	22.10	24.14	22.34
30 (dry)	47.19	44.90	46.80	47.00	46.48
40 (dry)	93.05	83.86	81.93	81.73	85.15
45 (dry)	115.58	104.86	102.36	94.85	104.42
20 (wet)	27.30	28.47	24.56	26.01	26.59

Table 4.2-8.2. Stability Test Results Form

Stability Test Results (Split Friction Road surface)			
Vehicle Direction	Attempt	Did test bus stay in 12' lane? (yes/no)	Comments
Drivers side on high friction	1	Yes	None noted
	2	Yes	None noted
Drivers side on low friction	1	Yes	None noted
	2	Yes	None noted

Table 4.2-8.3. Parking Brake Test Form

PARKING BRAKE (Fully Loaded) – GRADE HOLDING						
Vehicle Direction	Attempt	Hold Time (min)	Slide (in)	Roll (in)	Did Hold	No Hold
Front up	1	5:00	0	0	X	
	2	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A
Front down	1	5:00	0	0	X	
	2	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A

4.2 Performance - Bus Braking



20% UPHILL



20% DOWNHILL

5.1 STRUCTURAL INTEGRITY

5.1 STRUCTURAL STRENGTH AND DISTORTION TESTS – STRUCTURAL SHAKEDOWN TEST

5.1-I. DISCUSSION

The objective of this test is to determine certain static characteristics (e.g., bus floor deflection, permanent structural deformation, etc.) under static loading conditions.

5.1-II. TEST DESCRIPTION

In this test, the bus will be isolated from the suspension by blocking the vehicle under the suspension points. The bus will then be loaded and unloaded up to a maximum of three times with a distributed load equal to 2.5 times gross load. Gross load is 150 lb for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space. For a distributed load equal to 2.5 times gross load, place a 375-lb load on each seat and on every 1.5 sq ft of free floor space. The first loading and unloading sequence will "settle" the structure. Bus deflection will be measured at several locations during the loading sequences.

5.1-III. DISCUSSION

This test was performed based on a maximum passenger capacity of 41 people including the driver. The resulting test load is (41 X 375 lb) = 15,375 lb. The load is distributed evenly over the passenger space. Deflection data before and after each loading and unloading sequence is provided on the Structural Shakedown Data Form.

The unloaded height after each test becomes the original height for the next test. Some initial settling is expected due to undercoat compression, etc. After each loading cycle, the deflection of each reference point is determined. The bus is then unloaded and the residual (permanent) deflection is recorded. On the final test, the maximum loaded deflection was 0.149 inches at reference point 4. The maximum permanent deflection after the final loading sequence ranged from -0.004 inches at reference point 1 to 0.001 inches at reference point 7.

STRUCTURAL SHAKEDOWN DATA FORM

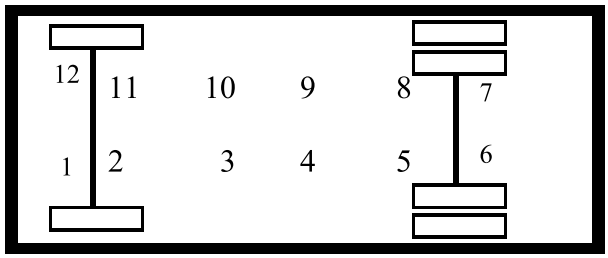
Bus Number: 1606	Date: 3-18-16
Personnel: S.R., E.L., J.P., J.S., M.H., C.S., R.S. & M.R.	Temperature (°F): 65
Loading Sequence: ■ 1 ☐ 2 ☐ 3 (check one) Test Load (lbs): 15,375 (41 seated passengers)	

Indicate Approximate Location of Each Reference Point

Right

Front of Bus

Left



Top View

Reference Point No.	A (in) Original Height	B (in) Loaded Height	B-A (in) Loaded Deflection	C (in) Unloaded Height	C-A (in) Permanent Deflection
1	0	-.081	-.081	-.003	-.003
2	0	.091	.091	.009	.009
3	0	.137	.137	.012	.012
4	0	.149	.149	.013	.013
5	0	.111	.111	.013	.013
6	0	.179	.179	.016	.016
7	0	.170	.170	.011	.011
8	0	.079	.079	.009	.009
9	0	.129	.129	.011	.011
10	0	.134	.134	.011	.011
11	0	.054	.054	.006	.006
12	0	-.078	-.078	.000	.000

STRUCTURAL SHAKEDOWN DATA FORM

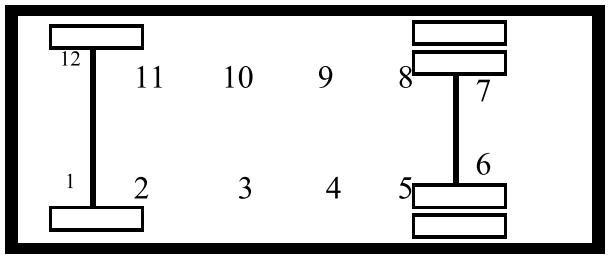
Bus Number: 1606	Date: 3-18-16
Personnel: S.R., E.L., J.P., J.S., M.H., C.S., R.S. & M.R.	Temperature (°F): 64
Loading Sequence: ☐ 1 ■ 2 ☐ 3 (check one) Test Load (lbs): 15,375 (41 seated passengers)	

Indicate Approximate Location of Each Reference Point

Right

Front of Bus

Left



Top View

Reference Point No.	A (in) Original Height	B (in) Loaded Height	B-A (in) Loaded Deflection	C (in) Unloaded Height	C-A (in) Permanent Deflection
1	-.003	-.092	-.095	-.001	-.004
2	.009	.099	.090	.008	-.001
3	.012	.148	.136	.011	-.001
4	.013	.162	.149	.013	.000
5	.013	.122	.109	.012	-.001
6	.016	.158	.142	.014	-.002
7	.011	.148	.137	.012	.001
8	.009	.091	.082	.009	.000
9	.011	.144	.133	.009	-.002
10	.011	.148	.137	.009	-.002
11	.006	.061	.055	.004	-.002
12	.000	-.087	-.087	-.001	-.001

5.1 STRUCTURAL SHAKEDOWN TEST



DIAL INDICATORS IN POSITION



BUS LOADED TO 2.5 TIMES GVL
(15,375 LBS)

5.2 STRUCTURAL STRENGTH AND DISTORTION TESTS - STRUCTURAL DISTORTION

5.2-I. TEST OBJECTIVE

The objective of this test is to observe the operation of the bus subsystems when the bus is placed in a longitudinal twist simulating operation over a curb or through a pothole.

5.2-II. TEST DESCRIPTION

With the bus loaded to GVWR, each wheel of the bus will be raised (one at a time) to simulate operation over a curb and the following will be inspected:

1. Body
2. Windows
3. Doors
4. Roof vents
5. Special seating
6. Undercarriage
7. Engine
8. Service doors
9. Escape hatches
10. Steering mechanism

Each wheel will then be lowered (one at a time) to simulate operation through a pothole and the same items inspected.

5.2-III. DISCUSSION

The test sequence was repeated ten times. The first and last test is with all wheels level. The other eight tests are with each wheel 6 inches higher and 6 inches lower than the other three wheels.

All doors, windows, escape mechanisms, engine and steering operated normally throughout the test. The undercarriage and body indicated no deficiencies. No water leakage was observed during the test. The results of this test are indicated on the following data forms.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	■ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies..
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	■ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	■ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	■ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	■ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	■ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	■ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiantcies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	■ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	■ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1606	Date: 3-29-16
Personnel: E.D., S.R., E.L. & P.D.	Temperature(°F): 46

Wheel Position : (check one)		
All wheels level	☐ before	■ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower

	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
Handicapped Device/ Special Seating	No deficiencies.
Undercarriage	No deficiencies.
Service Doors	No deficiencies.
Body	No deficiencies.
Windows/ Body Leakage	No deficiencies.
Steering Mechanism	No deficiencies.

5.2 STRUCTURAL DISTORTION TEST



RIGHT FRONT WHEEL SIX INCHES HIGHER



RIGHT REAR WHEEL SIX INCHES LOWER

5.3 STRUCTURAL STRENGTH AND DISTORTION TESTS - STATIC TOWING TEST

5.3-I. TEST OBJECTIVE

The objective of this test is to determine the characteristics of the bus towing mechanisms under static loading conditions.

5.3-II. TEST DESCRIPTION

Utilizing a load-distributing yoke, a hydraulic cylinder is used to apply a static tension load equal to 1.2 times the bus curb weight. The load will be applied to both the front and rear, if applicable, towing fixtures at an angle of 20 degrees with the longitudinal axis of the bus, first to one side then the other in the horizontal plane, and then upward and downward in the vertical plane. Any permanent deformation or damage to the tow eyes or adjoining structure will be recorded.

5.3-III. DISCUSSION

The load-distributing yoke was incorporated as the interface between the Static Tow apparatus and the test bus tow hook/eyes. The test was performed to the full target test weight of 21,792 lbs (1.2 x 18,160 lbs CW). No damage or deformation was observed during all four pulls of the test.

STATIC TOWING TEST DATA FORM

Bus Number: 1606	Date: 02-14-17
Personnel: T.S. & E.L.	Temperature (°F): 35

Inspect right front tow eye and adjoining structure.
Comments: No damage or deformation observed.
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: Bolts torqued.
Inspect left front tow eye and adjoining structure.
Comments: No damage or deformation observed.
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: Bolts torqued.
Inspect right rear tow eye and adjoining structure.
Comments: N/A
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: N/A
Inspect left rear tow eye and adjoining structure.
Comments: N/A
Check the torque of all bolts attaching tow eye and surrounding structure.
Comments: N/A
General comments of any other structure deformation or failure: The front bumper had to be removed for the test so it did not get damaged. All four pulls were performed to the target test load of 21,792 lbs.(18,160 lbs. CW x 1.2) with no damage or deformation observed. The manufacturer does not recommend towing from the rear. Therefore, a rear tow was not performed.

5.3 STATIC TOWING TEST



FRONT 20° UPWARD PULL



FRONT 20° DOWNWARD PULL

5.3 STATIC TOWING TEST CONT.



FRONT 20° LEFT PULL



FRONT 20° RIGHT PULL

5.4 STRUCTURAL STRENGTH AND DISTORTION TESTS - DYNAMIC TOWING TEST

5.4-I. TEST OBJECTIVE

The objective of this test is to verify the integrity of the towing fixtures and determine the feasibility of towing the bus under manufacturer specified procedures.

5.4-II. TEST DESCRIPTION

This test requires the bus be towed at curb weight using the specified equipment and instructions provided by the manufacturer and a heavy-duty wrecker. The bus will be towed for 5 miles at a speed of 20 mph for each recommended towing configuration. After releasing the bus from the wrecker, the bus will be visually inspected for any structural damage or permanent deformation. All doors, windows and passenger escape mechanisms will be inspected for proper operation.

5.4-III. DISCUSSION

The bus was towed using a heavy-duty wrecker. The towing interface was accomplished by incorporating a hydraulic under lift. A front lift tow was performed. Rear towing is not recommended. No problems, deformation, or damage was noted during testing.

DYNAMIC TOWING TEST DATA FORM

Bus Number: 1606	Date: 02-15-17
Personnel: T.S., S.R. & E.L.	

Temperature (°F): 39	
Wind Direction: NNW	Wind Speed (mph): 9

Inspect tow equipment-bus interface.
Comments: A safe and adequate connection was made between the tow equipment and the bus.
Inspect tow equipment-wrecker interface.
Comments: A safe and adequate connection was made between the tow equipment and the wrecker.
Towing Comments: A front lift tow was performed incorporating a hydraulic under lift wrecker.
Description and location of any structural damage: None noted.
General Comments: None other noted.

5.4 DYNAMIC TOWING TEST



TOWING INTERFACE



TEST BUS IN TOW

5.5 STRUCTURAL STRENGTH AND DISTORTION TESTS – JACKING TEST

5.5-I. TEST OBJECTIVE

The objective of this test is to inspect for damage due to the deflated tire, and determine the feasibility of jacking the bus with a portable hydraulic jack to a height sufficient to replace a deflated tire.

5.5-II. TEST DESCRIPTION

With the bus at curb weight, the tire(s) at one corner of the bus are replaced with deflated tire(s) of the appropriate type. A portable hydraulic floor jack is then positioned in a manner and location specified by the manufacturer and used to raise the bus to a height sufficient to provide 3-in clearance between the floor and an inflated tire. The deflated tire(s) are replaced with the original tire(s) and the jack is lowered. Any structural damage or permanent deformation is recorded on the test data sheet. This procedure is repeated for each corner of the bus.

5.5-III. DISCUSSION

The jack used for this test has a minimum height of 8.75 inches. During the deflated portion of the test, the jacking point clearances ranged from 5.5 inches to 20.5 inches. No deformation or damage was observed during testing. A complete listing of jacking point clearances is provided in the Jacking Test Data Form.

JACKING CLEARANCE SUMMARY

Condition	Frame Point Clearance
Front axle – one tire flat	10.0”
Rear axle – one tire flat	19.9”
Rear axle – two tires flat	17.0”

JACKING TEST DATA FORM

Bus Number: 1606	Date: 3-16-16
Personnel: S.R. & E.D.	Temperature (°F): 63

Record any permanent deformation or damage to bus as well as any difficulty encountered during jacking procedure.

Deflated Tire	Jacking Pad Clearance Body/Frame (in)	Jacking Pad Clearance Axle/Suspension (in)	Comments
Right front	14.9 “ I 12.7 “ D	8.7 “ I 6.1 “ D	None noted
Left front	12.1 “ I 10.0 “ D	8.9 “ I 6.2 “ D	None noted
Right rear—outside	21.2 “ I 20.5 “ D	8.0 “ I 7.6 “ D	None noted
Right rear—both	21.2 “ I 17.7 “ D	8.0 “ I 5.6 “ D	None noted
Left rear—outside	20.8 “ I 19.9 “ D	8.0 “ I 7.5 “ D	None noted
Left rear—both	20.8 “ I 17.0 “ D	8.0 “ I 5.5 “ D	None noted
Right middle or tag—outside	N/A	N/A	
Right middle or tag—both	N/A	N/A	
Left middle or tag—outside	N/A	N/A	
Left middle or tag—both	N/A	N/A	

Additional comments of any deformation or difficulty during jacking:

None noted.

5.6 STRUCTURAL STRENGTH AND DISTORTION TESTS - HOISTING TEST

5.6-I. TEST OBJECTIVE

The objective of this test is to determine possible damage or deformation caused by the jack/stands.

5.6-II. TEST DESCRIPTION

With the bus at curb weight, the front end of the bus is raised to a height sufficient to allow manufacturer-specified placement of jack stands under the axles or jacking pads independent of the hoist system. The bus will be checked for stability on the jack stands and for any damage to the jacking pads or bulkheads. The procedure is repeated for the tag axle and rear end of the bus. The procedure is then repeated for the front, tag axle and rear simultaneously.

5.6-III. DISCUSSION

The test was conducted using four posts of a six-post electric lift and standard 19 inch jack stands. The bus was hoisted from the front wheel, rear wheel, and then the front and rear wheels simultaneously and placed on jack stands.

The bus easily accommodated the placement of the vehicle lifts and jack stands and the procedure was performed without any instability noted.

HOISTING TEST DATA FORM

Bus Number: 1606	Date: 3-16-16
Personnel: E.D. & S.R.	Temperature (°F): 63

Comments of any structural damage to the jacking pads or axles while both the front wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the rear wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the tag axle wheels are supported by the jack stands:
N/A
Comments of any structural damage to the jacking pads or axles while both the front and rear wheels are supported by the jack stands:
None noted.
Comments of any problems or interference placing wheel hoists under wheels:
None noted.

5.7 STRUCTURAL DURABILITY TEST

5.7-I. TEST OBJECTIVE

The objective of this test is to perform an accelerated durability test that approximates up to 25 percent of the service life of the vehicle.

5.7-II. TEST DESCRIPTION

The test vehicle is driven a total of 11,250 miles; approximately 8,750 miles on the PSBRTF Durability Test Track and approximately 2,500 miscellaneous other miles. The test will be conducted with the bus operated under three different loading conditions. The first segment will consist of approximately 4,625 miles with the bus operated at GVW. The second segment will consist of approximately 2,000 miles with the bus operated at SLW. The remainder of the test, approximately 4,625 miles, will be conducted with the bus loaded to CW. If GVW exceeds the axle design weights, then the load will be adjusted to the axle design weights and the change will be recorded. All subsystems are run during these tests in their normal operating modes. All recommended manufacturers servicing is to be followed and noted on the vehicle maintainability log. Servicing items accelerated by the durability tests will be compressed by 10:1; all others will be done on a 1:1 mi/mi basis. Unscheduled breakdowns and repairs are recorded on the same log as are any unusual occurrences as noted by the driver. Once a week the test vehicle shall be washed down and thoroughly inspected for any signs of failure.

5.7-III. DISCUSSION

The Structural Durability Test was started on March 29, 2016 and was conducted until January 25, 2017. The first 4,625 miles were performed at a GVW of 24,330 lbs. and completed on September 12, 2016. Note; this test bus is not designed to accommodate standing passengers therefore GVW and SLW are the same load. The next 2,000 mile SLW segment was performed at the same 24,330 lbs and completed on November 4, 2016. The final 4,625 mile segment was performed at a CW of 18,160 lbs and completed on February 7, 2017.

The following mileage summary presents the accumulation of miles during the Structural Durability Test. The driving schedule is included, showing the operating duty cycle. A detailed plan view of the Test Track Facility and Durability Test Track are attached for reference. Also, a durability element profile detail shows all the measurements of the different conditions. Finally, photographs illustrating some of the failures that were encountered during the Structural Durability Test are included.

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
03/28/16 TO 04/03/16	222.00	60.00	282.00
04/04/16 TO 04/10/16	526.00	23.00	549.00
04/11/16 TO 04/17/16	488.00	67.00	555.00
04/18/16 TO 04/24/16	0.00	0.00	0.00
04/25/16 TO 05/01/16	0.00	0.00	0.00
05/02/16 TO 05/08/16	0.00	0.00	0.00
05/09/16 TO 05/15/16	35.00	56.00	91.00
05/16/16 TO 05/22/16	0.00	51.00	51.00
05/23/16 TO 05/29/16	0.00	0.00	0.00
05/30/16 TO 06/05/16	45.00	123.00	168.00
06/06/16 TO 06/12/16	514.00	23.00	537.00
06/13/16 TO 06/19/16	0.00	0.00	0.00
06/20/16 TO 06/26/16	0.00	0.00	0.00
06/27/16 TO 07/03/16	0.00	0.00	0.00

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
07/04/16 TO 07/10/16	0.00	40.00	40.00
07/11/16 TO 07/17/16	499.00	88.00	587.00
07/18/16 TO 07/24/16	0.00	0.00	0.00
07/25/16 TO 07/31/16	0.00	0.00	0.00
08/01/16 TO 08/07/16	542.00	24.00	566.00
08/08/16 TO 08/14/16	490.00	23.00	513.00
08/15/16 TO 08/21/16	42.00	53.00	95.00
08/22/16 TO 08/28/16	0.00	0.00	0.00
08/29/16 TO 09/04/16	0.00	0.00	0.00
09/05/16 TO 09/11/16	145.00	75.00	220.00
09/12/16 TO 09/18/16	357.00	74.00	431.00
09/19/16 TO 09/25/16	597.00	77.00	674.00
09/26/16 TO 10/02/16	264.00	306.00	570.00
10/03/16 TO 10/09/16	0.00	0.00	0.00

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
10/10/16 TO 10/16/16	0.00	0.00	0.00
10/17/16 TO 10/23/16	0.00	0.00	0.00
10/24/16 TO 10/30/16	295.00	87.00	382.00
10/31/16 TO 11/06/16	114.00	63.00	177.00
11/07/16 TO 11/13/16	1114.00	52.00	1166.00
11/14/16 TO 11/20/16	991.00	238.00	1229.00
11/21/16 TO 11/27/16	103.00	5.00	108.00
11/28/16 TO 12/04/16	612.00	223.00	835.00
12/05/16 TO 12/11/16	35.00	2.00	37.00
12/12/16 TO 12/18/16	720.00	34.00	754.00
12/19/16 TO 12/25/16	0.00	47.00	47.00
12/26/16 TO 01/01/17	0.00	0.00	0.00
01/02/17 TO 01/08/17	0.00	0.00	0.00
01/09/17 01/15/17	0.00	284.00	284.00

Glaval Bus #1606

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
01/16/17 TO 01/22/17	0.00	101.00	101.00
01/23/17 TO 01/29/17	0.00	120.00	120.00
01/30/17 02/05/17	0.00	80.00	80.00
02/06/17 TO 02/12/17	0.00	47.00	47.00
TOTAL	8750.00	2546.00	11296.00

Table 4. Driving Schedule for Bus Operation on the Durability Test Track.

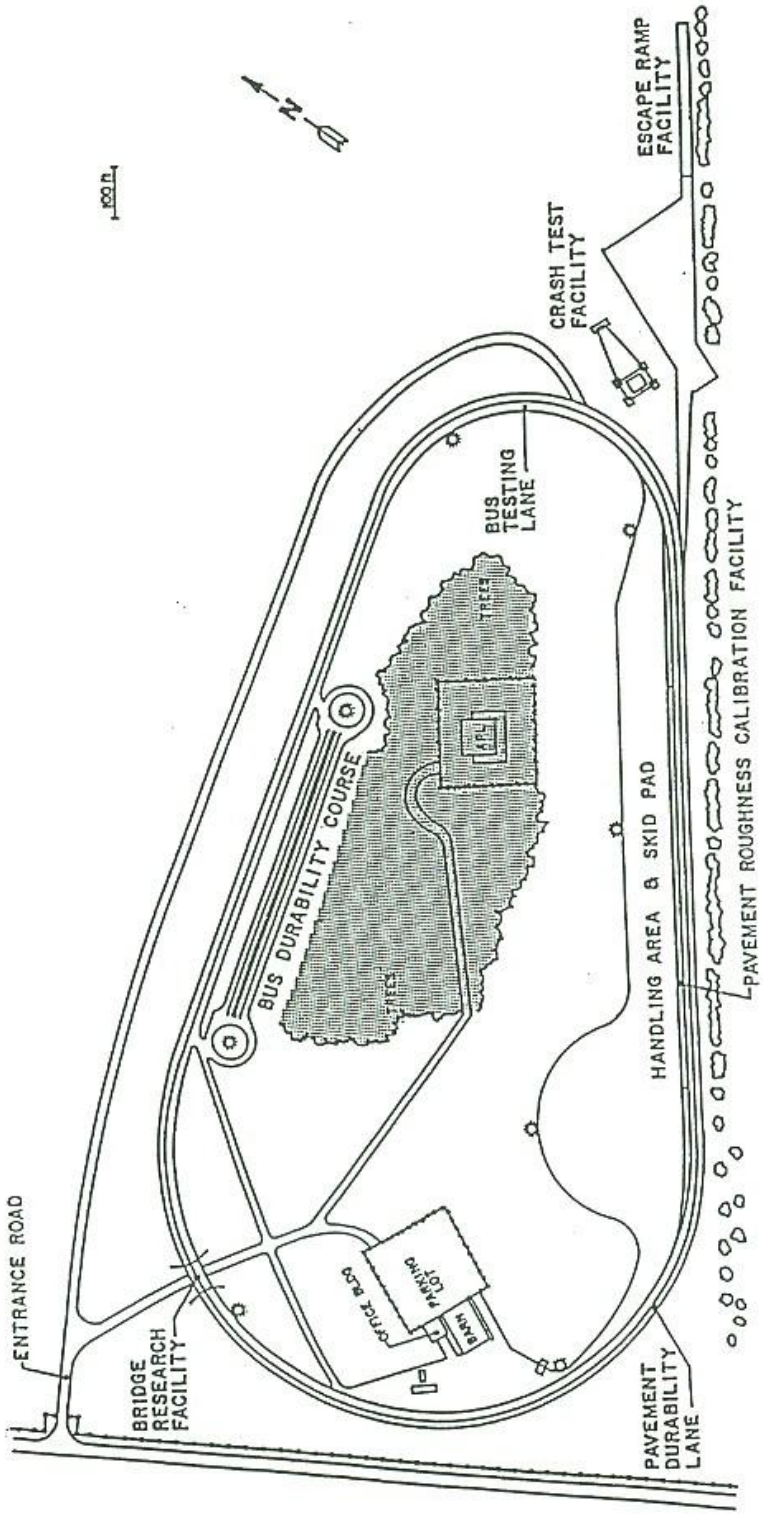
STANDARD OPERATING SCHEDULE

Monday through Friday

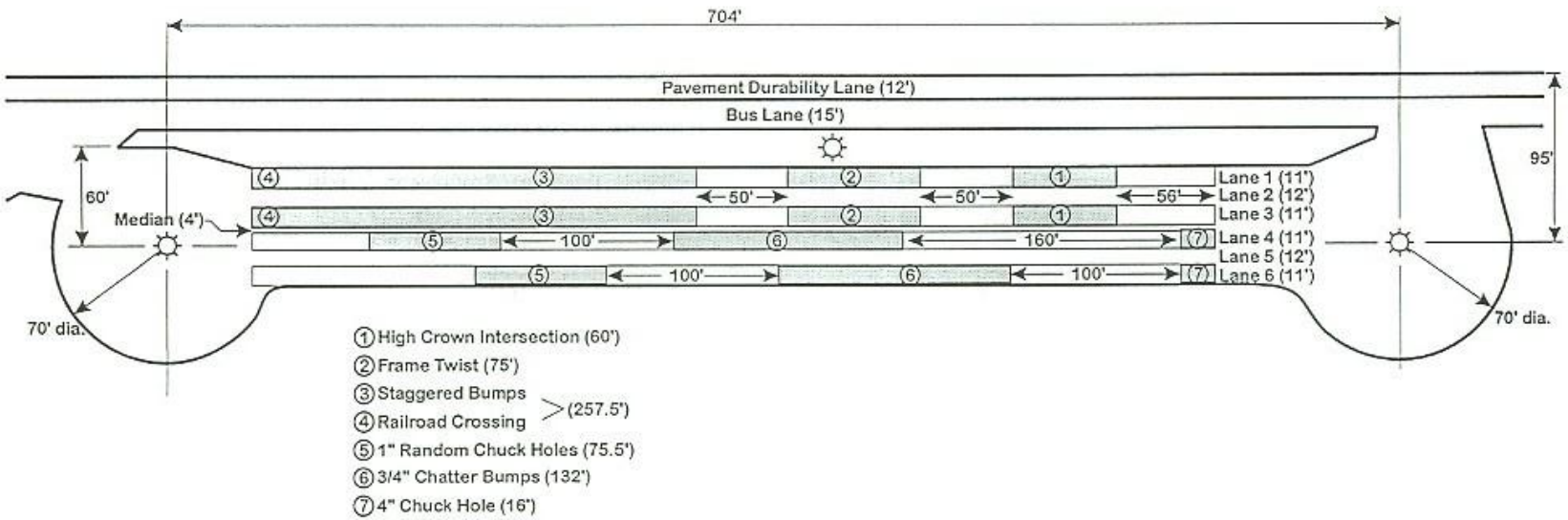
	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 3	4:00 pm	D
	5:40 pm	C
	5:50 pm	B
	6:00 pm	D
	7:40 pm	C
	7:50 pm	B
	8:05 pm	D
	9:40 pm	C
	9:50 pm	B
	10:00 pm	D
	11:40 pm	C
	11:50 pm	F

B---Break
C----Cycle all systems five times, visual inspection, driver's log entries
D----Drive bus as specified by procedure
F----Fuel bus, complete driver's log shift entries

"PLAN VIEW OF PENN STATE BUS TESTING AND RESEARCH FACILITY"



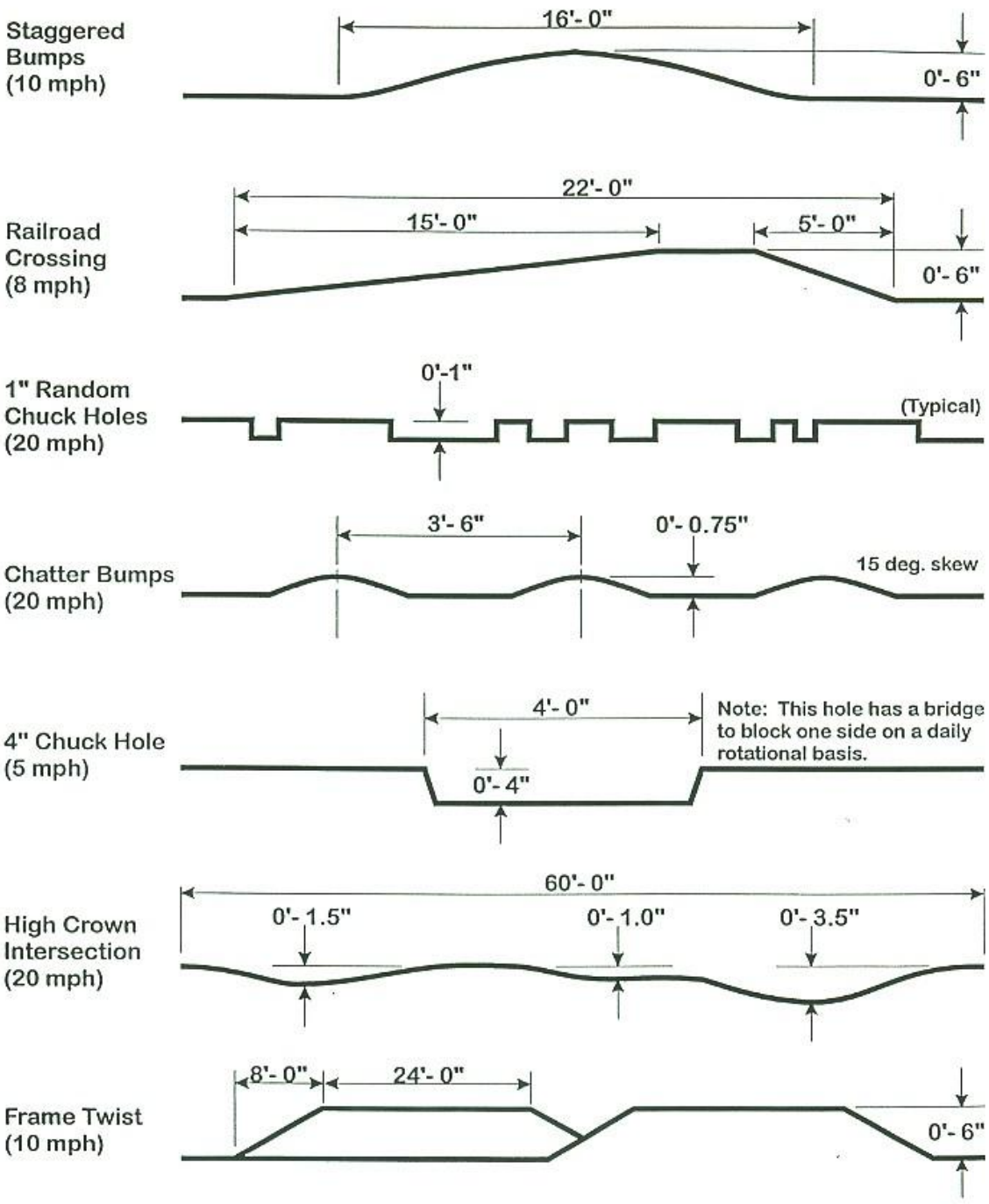
BUS TESTING AND RESEARCH TEST TRACK
UNIVERSITY PARK, PA



Plan View

Vehicle Durability Test Track

The Pennsylvania Transportation Institute
Penn State



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

(Page 1 of 2)
UNSCHEDULED MAINTENANCE
GLAVAL BUS #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
04-07-16	638	Trouble shoot intermittent "Check Engine" light.	Trouble shooting found code P067C (cylinder 5 glow plug circuit low). "Check Engine" light is currently out.	2.00	464.00
06-01-16	1,528	Clamp on coolant line positioned incorrectly causing it to rub through the A/C condenser line.	A/C condenser line repaired and coolant clamp positioned properly.	16.00	240.00
07-08-16	2,273	Rear bumper step has broken off.	Welded/repaired rear bumper step.	3.00	12.00
08-03-16	2,860	The fuel tank is leaking at the bottom, forward side.	Fuel tank replaced.	6.00	320.00
08-03-16	2,860	Manufacturer request a modified lower radiator hose be installed.	2" x 4" lower radiator hose modification installed.	3.00	3.00
09-12-16	4,160	The "Check Engine" light is on. Engine shuts down.	Scan OBD system for codes. Collected codes and informed manufacturer.	2.00	72.00
09-28-16	5,782	The front sway bar is broken at the right side.	Front sway bar replaced.	2.00	16.00
09-29-16	5,878	Inspect for noise & sparks coming from the engine compartment.	Troubleshooting found the A/C clutch on the O.E.M. compressor broken. New compressor ordered.	2.00	2.00

(Page 2 of 2)
UNSCHEDULED MAINTENANCE
GLAVAL BUS #1606

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
10-10-16	5,929	The air conditioning compressor is seized up.	Remove and replaced failed A/C compressor. Evacuate system and charge with Freon.	8.00	288.00
11-09-16	7,002	The exhaust has 3 broken hangers.	3 broken hangers replaced.	2.00	2.00
12-17-16	9,863	Rear bumper step has broken off.	Welded/repaired rear bumper step.	1.00	4.00
12-12-16	9,863	The lower radiator hose wore through from contact with the A/C compressor.	Coolant drained, lower radiator hose replaced, refilled coolant.	4.00	16.00
12-15-16	10,411	Both engine hood hinges are broken.	Hinges welded/repaired.	2.00	2.00
12-21-16	10,644	The left rear shock is leaking oil.	Both rear shocks replaced.	4.00	6.00
12-21-16	10,644	The front sway bar is cracked.	Front sway bar replaced.	2.00	6.00



CLAMP RUBBING THROUGH A/C CONDENSOR
(1,528 TEST MILES)



REAR BUMPER STEP BROKEN OFF
(2,273 TEST MILES)



LEAKING FUEL TANK
(2,860 TEST MILES)



RADIATOR HOSE MODIFIED WITH P-CLIP
(2,860 TEST MILES)



BROKEN FRONT SWAY BAR
(5,782 TEST MILES)



BROKEN CLUTCH ON A/C COMPRESSOR
(5,878 TEST MILES)

UNSCHEDULED MAINTENANCE CONT.



LOWER RADIATOR HOSE WORE THROUGH DUE TO CONTACT WITH A/C COMPRESSOR (9,863 TEST MILES)



BOTH REAR SHOCKS REPLACED (10,664 TEST MILES)

6. FUEL ECONOMY TEST - A FUEL CONSUMPTION TEST USING AN APPROPRIATE OPERATING CYCLE

6-I. TEST OBJECTIVE

The objective of this test is to provide accurate comparable fuel consumption data on transit buses produced by different manufacturers. This fuel economy test bears no relation to the calculations done by the Environmental Protection Agency (EPA) to determine levels for the Corporate Average Fuel Economy Program. EPA's calculations are based on tests conducted under laboratory conditions intended to simulate city and highway driving. This fuel economy test, as designated here, is a measurement of the fuel expended by a vehicle traveling a specified test loop under specified operating conditions. The results of this test will not represent actual mileage but will provide data that can be used by recipients to compare buses tested by this procedure.

6-II. TEST DESCRIPTION

This test requires operation of the bus over a course based on the Transit Coach Operating Duty Cycle (ADB Cycle) at seated load weight using a procedure based on the Fuel Economy Measurement Test (Engineering Type) For Trucks and Buses: SAE 1376 July 82. The procedure has been modified by elimination of the control vehicle and by modifications as described below. The inherent uncertainty and expense of utilizing a control vehicle over the operating life of the facility is impractical.

The fuel economy test will be performed as soon as possible (weather permitting) after the completion of the GVW portion of the structural durability test. It will be conducted on the bus test lane at the Penn State Test Facility. Signs are erected at carefully measured points which delineate the test course. A test run will comprise 3 CBD phases, 2 Arterial phases, and 1 Commuter phase. An electronic fuel measuring system will indicate the amount of fuel consumed during each phase of the test. The test runs will be repeated until there are at least two runs in both the clockwise and counterclockwise directions in which the fuel consumed for each run is within ± 4 percent of the average total fuel used over the 4 runs. A 20-minute idle consumption test is performed just prior to and immediately after the driven portion of the fuel economy test. The amount of fuel consumed while operating at normal/low idle is recorded on the Fuel Economy Data Form. This set of four valid runs along with idle consumption data comprise a valid test.

The test procedure is the ADB cycle with the following four modifications:

1. The ADB cycle is structured as a set number of miles in a fixed time in the following order: CBD, Arterial, CBD, Arterial, CBD, and Commuter. A separate idle fuel consumption measurement is performed at the beginning and end of the fuel economy test. This phase sequence permits the reporting of fuel consumption for each of these phases separately, making the data more useful to bus manufacturers and transit properties.

2. The operating profile for testing purposes shall consist of simulated transit type service at seated load weight. The three test phases (figure 6-1) are: a central business district (CBD) phase of 2 miles with 7 stops per mile and a top speed of 20 mph; an arterial phase of 2 miles with 2 stops per mile and a top speed of 40 mph; and a commuter phase of 4 miles with 1 stop and a maximum speed of 40 mph. At each designated stop the bus will remain stationary for seven seconds. During this time, the passenger doors shall be opened and closed.

3. The individual ADB phases remain unaltered with the exception that 1 mile has been changed to 1 lap on the Penn State Test Track. One lap is equal to 5,042 feet. This change is accommodated by adjusting the cruise distance and time.

4. The acceleration profile, for practical purposes and to achieve better repeatability, has been changed to "full throttle acceleration to cruise speed".

Several changes were made to the Fuel Economy Measurement Test (Engineering Type) For Trucks and Buses: SAE 1376 July 82:

1. Sections 1.1, and 1.2 only apply to diesel, gasoline, methanol, and any other fuel in the liquid state (excluding cryogenic fuels).

1.1 SAE 1376 July 82 requires the use of at least a 16-gal fuel tank. Such a fuel tank when full would weigh approximately 160 lb. It is judged that a 12-gal tank weighing approximately 120 lb will be sufficient for this test and much easier for the technician and test personnel to handle.

1.2 SAE 1376 July 82 mentions the use of a mechanical scale or a flowmeter system. This test procedure uses a load cell readout combination that provides an accuracy of 0.5 percent in weight and permits on-board weighing of the gravimetric tanks at the end of each phase. This modification permits the determination of a fuel economy value for each phase as well as the overall cycle.

2. Section 2.1 applies to compressed natural gas (CNG), liquefied natural gas (LNG), cryogenic fuels, and other fuels in the vapor state.

2.1 A laminar type flowmeter will be used to determine the fuel consumption. The pressure and temperature across the flow element will be monitored by the flow computer. The flow computer will use this data to calculate the gas flow rate. The flow computer will also display the flow rate (scfm) as well as the total fuel used (scf). The total fuel used (scf) for each phase will be recorded on the Fuel Economy Data Form.

3. Use both Sections 1 and 2 for dual fuel systems.

FUEL ECONOMY CALCULATION PROCEDURE

A. For diesel, gasoline, methanol and fuels in the liquid state.

The reported fuel economy is based on the following: measured test quantities--distance traveled (miles) and fuel consumed (pounds); standard reference values--density of water at 60EF (8.3373 lbs/gal) and volumetric heating value of standard fuel; and test fuel specific gravity (unitless) and volumetric heating value (BTU/gal). These combine to give a fuel economy in miles per gallon (mpg) which is corrected to a standard gallon of fuel referenced to water at 60EF. This eliminates fluctuations in fuel economy due to fluctuations in fuel quality. This calculation has been programmed into a computer and the data processing is performed automatically.

The fuel economy correction consists of three steps:

1.) Divide the number of miles of the phase by the number of pounds of fuel consumed

phase	miles per phase	total miles per run
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$FEo_{mi/lb}$ = Observed fuel economy = $\frac{\text{miles}}{\text{lb of fuel}}$

2.) Convert the observed fuel economy to miles per gallon [mpg] by multiplying by the specific gravity of the test fuel Gs (referred to water) at 60°F and multiply by the density of water at 60°F

$$\mathbf{FEo_{mpg}} = \mathbf{FEc_{mi/lb}} \times Gs \times Gw$$

where **Gs** = Specific gravity of test fuel at 60°F (referred to water)
Gw = 8.3373 lb/gal

3.) Correct to a standard gallon of fuel by dividing by the volumetric heating value of the test fuel (H) and multiplying by the volumetric heating value of standard reference fuel (Q). Both heating values must have the same units.

$$\mathbf{FEc} = \mathbf{FEo_{mpg}} \times \frac{Q}{H}$$

where

H = Volumetric heating value of test fuel [BTU/gal]
Q = Volumetric heating value of standard reference fuel

Combining steps 1-3 yields

$$\Rightarrow FEc = \frac{miles}{lbs} \times (Gs \times Gw) \times \frac{Q}{H}$$

4.) Covert the fuel economy from mpg to an energy equivalent of miles per BTU. Since the number would be extremely small in magnitude, the energy equivalent will be represented as miles/BTUx10^6.

Eq = Energy equivalent of converting mpg to mile/BTUx10^6.

$Eq = ((mpg)/(H))x10^6$

B. CNG, LNG, cryogenic and other fuels in the vapor state.

The reported fuel economy is based on the following: measured test quantities--distance traveled (miles) and fuel consumed (scf); density of test fuel, and volumetric heating value (BTU/lb) of test fuel at standard conditions (P=14.73 psia and T=60°F). These combine to give a fuel economy in miles per lb. The energy equivalent (mile/BTUx10^6) will also be provided so that the results can be compared to buses that use other fuels.

1.) Divide the number of miles of the phase by the number of standard cubic feet (scf) of fuel consumed.

phase	miles per phase	total miles per run
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$FEo_{mi/scf}$ = Observed fuel economy = $\frac{\text{miles}}{\text{scf of fuel}}$

2.) Convert the observed fuel economy to miles per lb by dividing FEo by the density of the test fuel at standard conditions (Lb/ft^3).

Note: The density of test fuel must be determined at standard conditions as described above. If the density is not defined at the above standard conditions, then a correction will be needed before the fuel economy can be calculated.

$$FEo_{mi/lb} = FEo / Gm$$

where Gm = Density of test fuel at standard conditions

3.) Convert the observed fuel economy (FEomi/lb) to an energy equivalent of (miles/BTUx10^6) by dividing the observed fuel economy (FEomi/lb) by the heating value of the test fuel at standard conditions.

$$Eq = ((FEomi/lb)/H)x10^6$$

where

Eq = Energy equivalent of miles/lb to mile/BTUx10^6
H = Volumetric heating value of test fuel at standard conditions

6-III. DISCUSSION

This is a comparative test of fuel economy using diesel fuel with a heating value of 19568.0 btu/lb. The driving cycle consists of Central Business District (CBD), Arterial (ART), and Commuter (COM) phases as described in 6-II. The fuel consumption for each driving cycle and for idle is measured separately. The results are corrected to a reference fuel with a volumetric heating value of 126,700.0 btu/gal.

An extensive pretest maintenance check is made including the replacement of all lubrication fluids. The details of the pretest maintenance are given in the first three Pretest Maintenance Forms. The fourth sheet shows the Pretest Inspection. The next four Fuel Economy Forms provide the data from the four test runs. Finally, the summary sheet provides the average fuel consumption. The overall average is based on total fuel and total mileage for each phase. The overall average fuel consumption values were; CBD – 4.84 mpg, ART – 5.16 mpg, and COM – 9.37 mpg. Average fuel consumption at idle was 0.39 gph.

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1606	Date: 01-06-17	SLW (lbs): 24,340
Personnel: P.D.,E.L.& S.R.		

FUEL SYSTEM	OK
Install fuel measurement system	✓
Replace fuel filter	✓
Check for fuel leaks	✓
Specify fuel type (refer to fuel analysis)	Diesel
Remarks: None noted.	
BRAKES/TIRES	OK
Inspect hoses	✓
Inspect brakes	✓
Relube wheel bearings	✓
Check tire inflation pressures (mfg. specs.)	✓
Check tire wear (less than 50%)	✓
Remarks: None noted.	
COOLING SYSTEM	OK
Check hoses and connections	✓
Check system for coolant leaks	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1606	Date: 01-06-17
Personnel: P.D., E.L. & S.R.	

ELECTRICAL SYSTEMS	OK
Check battery	✓
Inspect wiring	✓
Inspect terminals	✓
Check lighting	✓
Remarks: None noted.	

DRIVE SYSTEM	OK
Drain transmission fluid	✓
Replace filter/gasket	✓
Check hoses and connections	✓
Replace transmission fluid	✓
Check for fluid leaks	✓
Remarks: None noted.	

LUBRICATION	OK
Drain crankcase oil	✓
Replace filters	✓
Replace crankcase oil	✓
Check for oil leaks	✓
Check oil level	✓
Lube all chassis grease fittings	✓
Lube universal joints	✓
Replace differential lube including axles (Done by manufacturer)	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1606	Date: 01-06-17
Personnel: P.D.,E.L. & S.R.	

EXHAUST/EMISSION SYSTEM	OK
Check for exhaust leaks	✓
Remarks: None noted.	

ENGINE	OK
Replace air filter	✓
Inspect air compressor and air system	✓
Inspect vacuum system, if applicable	✓
Check and adjust all drive belts	✓
Check cold start assist, if applicable N/A	✓
Remarks: None noted.	

STEERING SYSTEM	OK
Check power steering hoses and connectors	✓
Service fluid level	✓
Check power steering operation	✓
Remarks: None noted.	

	OK
Ballast bus to seated load weight	✓

TEST DRIVE	OK
Check brake operation	✓
Check transmission operation	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST INSPECTION FORM

Bus Number: 1606	Date: 01-25-17
Personnel: S.R.,E.L.,E.D. & S.B.	

PRE WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	S.R.
Cold tire pressure (psi): Front 120 Middle N/A Rear 120	S.R./S.B.
Engine oil level	S.R./S.B.
Engine coolant level	S.R./S.B.
Interior and exterior lights on, evaporator fan on	S.R.
Fuel economy instrumentation installed and working properly.	S.R.
Fuel line -- no leaks or kinks	S.R.
Speed measuring system installed on bus. Speed indicator installed in front of bus and accessible to TECH and Driver.	S.R.
Bus is loaded to SLW	S.R.
WARM-UP	**If OK, Initial**
Bus driven for at least one hour warm-up	S.R./S.B.
No extensive or black smoke from exhaust	S.R./S.B.
POST WARM-UP	**If OK, Initial**
Warm tire pressure (psi): Front 125 Middle N/A Rear 125	S.R.
Environmental conditions Average wind speed <12 mph and maximum gusts <15 mph Ambient temperature between 30°F(-1C°) and 90°F(32°C) Track surface is dry Track is free of extraneous material and clear of interfering traffic	S.R.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 1	Personnel: S.R.,T.S.,E.L. & S.B.	
Test Direction: □CW or ■CCW	Temperature (°F): 39	Humidity (%): 72
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 10 W	Barometric Pressure (in.Hg): 29.80

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:30	8:30	17.1	0	.357	.357
ART #1	0	4:07	4:07	19.7	0	.338	.338
CBD #2	0	8:31	8:31	21.9	0	.357	.357
ART #2	0	4:04	4:04	25.0	0	.338	.338
CBD #3	0	8:30	8:30	24.4	0	.363	.363
COMMUTER	0	6:02	6:02	28.3	0	.378	.378
						Total Fuel =	2.131 gals

20 minute idle : Total Fuel Used = .126 gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 2	Personnel: S.R.,T.S.,E.L. & S.B.	
Test Direction: ■CW or □CCW	Temperature (°F): 41	Humidity (%): 71
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 10 W	Barometric Pressure (in.Hg): 29.70

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:30	8:30	25.7	0	.357	.357
ART #1	0	4:04	4:04	26.9	0	.333	.333
CBD #2	0	8:27	8:27	28.2	0	.361	.361
ART #2	0	4:04	4:04	29.7	0	.340	.340
CBD #3	0	8:25	8:25	29.7	0	.363	.363
COMMUTER	0	6:02	6:02	30.8	0	.369	.369
						Total Fuel =	2.123 gals

20 minute idle : Total Fuel Used = N/A gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 3	Personnel: S.R.,E.L.,E.D. & S.B.	
Test Direction: □CW or ■CCW	Temperature (°F): 42	Humidity (%): 66
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 9 W	Barometric Pressure (in.Hg): 29.70

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:20	8:20	21.8	0	.343	.343
ART #1	0	4:08	4:08	24.9	0	.333	.333
CBD #2	0	8:34	8:34	27.1	0	.359	.359
ART #2	0	4:03	4:03	28.4	0	.334	.334
CBD #3	0	8:33	8:33	28.4	0	.356	.356
COMMUTER	0	6:04	6:04	28.1	0	.368	.368
						Total Fuel =	2.093 gals

20 minute idle : Total Fuel Used = N/A gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Page 4 of 4

Bus Number: 1606	Manufacturer: Glaval	Date: 01-25-17
Run Number: 4	Personnel: S.R.,E.L.,E.D. & S.B.	
Test Direction: ■CW or □CCW	Temperature (°F): 42	Humidity (%): 66
SLW (lbs): 24,340	Wind Speed (mph) & Direction: 10 W	Barometric Pressure (in.Hg): 29.70

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:34	8:34	26.9	0	.351	.351
ART #1	0	4:07	4:07	29.9	0	.327	.327
CBD #2	0	8:34	8:34	30.2	0	.356	.356
ART #2	0	4:05	4:05	29.3	0	.334	.334
CBD #3	0	8:32	8:32	31.1	0	.358	.358
COMMUTER	0	6:01	6:01	32.5	0	.359	.359
						Total Fuel =	2.085 gals

20 minute idle : Total Fuel Used = .109 gals

Heating Value = 19,568 BTU/LB

Comments: None noted.

FUEL ECONOMY SUMMARY SHEET

BUS MANUFACTURER: Glaval BUS NUMBER: 1606
BUS MODEL : Concorde II TEST DATE : 01/25/17

FUEL TYPE : DIESEL
SP. GRAVITY : .8505
HEATING VALUE : 19568.00 BTU/Lb
FUEL TEMPERATURE : 80.00 deg F
Standard Conditions: 60 deg F and 14.7 psi
Density of Water : 8.3373 lb/gallon at 60 deg F

CYCLE	TOTAL FUEL USED(GAL)	TOTAL MILES	FUEL ECONOMY MPG(Measured)	FUEL ECONOMY MPG (Corrected)
Run # 1, CCW				
CBD	1.077	5.73	5.320	4.81
ART	.676	3.82	5.651	5.11
COM	.378	3.82	10.106	9.14
TOTAL	2.131	13.37	6.274	5.67
Run # 2, CW				
CBD	1.081	5.73	5.301	4.79
ART	.673	3.82	5.676	5.13
COM	.369	3.82	10.352	9.36
TOTAL	2.123	13.37	6.298	5.69
Run # 3, CCW				
CBD	1.058	5.73	5.416	4.90
ART	.667	3.82	5.727	5.18
COM	.368	3.82	10.380	9.38
TOTAL	2.093	13.37	6.388	5.77
Run # 4, CW				
CBD	1.065	5.73	5.380	4.86
ART	.661	3.82	5.779	5.22
COM	.359	3.82	10.641	9.62
TOTAL	2.085	13.37	6.412	5.80

IDLE CONSUMPTION (MEASURED)

First 20 Minutes Data: .13GAL Last 20 Minutes Data: .11GAL
Average Idle Consumption: .35GAL/Hr

RUN CONSISTENCY: % Difference from overall average of total fuel used

Run 1: -1.1 Run 2: -.7 Run 3: .7 Run 4: 1.1

SUMMARY (CORRECTED VALUES)

Average Idle Consumption : .39 G/Hr
Average CBD Phase Consumption : 4.84 MPG
Average Arterial Phase Consumption: 5.16 MPG
Average Commuter Phase Consumption: 9.37 MPG
Overall Average Fuel Consumption : 5.73 MPG
Overall Average Fuel Consumption : 41.33 Miles/ Million BTU

7. NOISE

7.1 INTERIOR NOISE AND VIBRATION TESTS

7.1-I. TEST OBJECTIVE

The objective of these tests is to measure and record interior noise levels and check for audible vibration under various operating conditions.

7.1-II. TEST DESCRIPTION

During this series of tests, the interior noise level will be measured at several locations with the bus operating under the following three conditions:

1. With the bus stationary, a white noise generating system shall provide a uniform sound pressure level equal to 80 dB(A) on the left, exterior side of the bus. The engine and all accessories will be switched off and all openings including doors and windows will be closed. This test will be performed at the Test Track Facility.

2. The bus accelerating at full throttle from a standing start to 35 mph on a level pavement. All openings will be closed and all accessories will be operating during the test. This test will be performed on the track at the Test Track Facility.

3. The bus will be operated at various speeds from 0 to 55 mph with and without the air conditioning and accessories on. Any audible vibration or rattles will be noted. This test will be performed on the test segment between the Test Track and the Bus Testing Center.

All tests will be performed in an area free from extraneous sound-making sources or reflecting surfaces. The ambient sound level as well as the surrounding weather conditions will be recorded in the test data.

7.1-III. DISCUSSION

This test is performed in three parts. The first part exposes the exterior of the vehicle to 80.0 dB(A) on the left side of the bus and the noise transmitted to the interior is measured. The overall average of the six measurements was 43.3 dB(A); ranging from 41.6 dB(A) in line with the front speaker to 45.1 dB(A) in line with the rear speaker. The interior ambient noise level for this test was < 30.0 dB(A).

The second test measures interior noise during acceleration from 0 to 35 mph. This noise level ranged from 66.4 dB(A) at the middle passenger seats to 68.7 dB(A) at the front passenger seats. The overall average was 67.7 dB(A). The interior ambient noise level for this test was < 30.0 dB(A).

The third part of the test is to listen for resonant vibrations, rattles, and other noise sources while operating over the road. No vibrations or rattles were noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 1: 80 dB(A) Stationary White Noise

Bus Number: 1606	Date: 02-06-17
Personnel: S.R., T.S. & E.D.	
Temperature (°F): 38	Humidity (%): 64
Wind Speed (mph): 6	Wind Direction: SW
Barometric Pressure (in.Hg): 30.20	
Initial Sound Level Meter Calibration: 93.6 dB(A) Checked By: T.S.	
Interior Ambient Noise Level dB(A): < 30.0	Exterior Ambient Noise Level dB(A): 35.1
Microphone Height During Testing (in): 45.5	
Initial Reading at Bus: 80.6 dB(A)	Final Reading at Bus: 80.5 dB(A)

Reading Location	Measured Sound Level dB(A)
Driver's Seat	41.9
Front Passenger Seats	43.9
In Line with Front Speaker	41.6
In Line with Middle Speaker	43.7
In Line with Rear Speaker	45.1
Rear Passenger Seats	43.7

Final Sound Level Meter Calibration: 93.7 dB(A) Checked By: T.S.

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 32	Humidity (%): 85
Wind Speed (mph): 2	Wind Direction: N
Barometric Pressure (in.Hg): 30.2	
Initial Sound Level Meter Calibration: 93.7 dB(A)	
Interior Ambient Noise Level dB(A): < 30.0	Exterior Ambient Noise Level dB(A): 43.5
Microphone Height During Testing (in): 47.2	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	67.2
Front Passenger Seats	68.7
Middle Passenger Seats	66.4
Rear Passenger Seats	68.5

Final Sound Level Meter Calibration: 93.7 dB(A)

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test

Bus Number: 1606	Date: 01-13-17
Personnel: T.S., E.D. & M.R.	
Temperature (°F): 39	

Describe the following possible sources of noise and give the relative location on the bus.

Source of Noise	Location	Description of Noise
Engine and Accessories	None	N/A
Windows and Doors	None	N/A
Seats and Wheel Chair lifts	None	N/A
Other	None	N/A

Comment on any other vibration or noise source which may have occurred
that is not described above: None noted.
Comments: None noted.

7.1 INTERIOR NOISE TEST



TEST BUS SET-UP FOR 80 dB(A)
INTERIOR NOISE TEST

7.2 EXTERIOR NOISE TESTS

7.2-I. TEST OBJECTIVE

The objective of this test is to record exterior noise levels when a bus is operated under various conditions.

7.2-II. TEST DESCRIPTION

In the exterior noise tests, the bus will be operated at a SLW in three different conditions using a smooth, straight and level roadway:

1. Accelerating at full throttle from a constant speed at or below 35 mph and just prior to transmission up shift.
2. Accelerating at full throttle from standstill.
3. Stationary, with the engine at low idle, high idle, and wide open throttle.

In addition, the buses will be tested with and without the air conditioning and all accessories operating. The exterior noise levels will be recorded.

The test site is at the PSBRTF and the test procedures will be in accordance with SAE Standards SAE J366b, Exterior Sound Level for Heavy Trucks and Buses. The test site is an open space free of large reflecting surfaces. A noise meter placed at a specified location outside the bus will measure the noise level.

During the test, special attention should be paid to:

1. The test site characteristics regarding parked vehicles, signboards, buildings, or other sound-reflecting surfaces
2. Proper usage of all test equipment including set-up and calibration
3. The ambient sound level

7.2-III. DISCUSSION

The Exterior Noise Test determines the noise level generated by the vehicle under different driving conditions and at stationary low and high idle, with and without air conditioning and accessories operating. The test site is a large, level, bituminous paved area with no reflecting surfaces nearby.

With an exterior ambient noise level of 40.5 dB(A), the average test result obtained while accelerating from a constant speed was 69.8 dB(A) on the right side and 70.1 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 41.4 dB(A), the average of the results obtained were 69.9 dB(A) on the right side and 70.0 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 48.8 dB(A) at low idle and 69.2 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 0.4 dB(A) lower at low idle and 0.1 dB(A) higher at wide open throttle. The exterior ambient noise level measured during this test was 41.9 dB(A). Note; this test bus is not equipped with a fast idle mode.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Constant Speed

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 32	Humidity (%): 86
Wind Speed (mph): 1	Wind Direction: N
Barometric Pressure (in.Hg): 30.20	

Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■

Initial Sound Level Meter Calibration: 93.7 dB(A)

Exterior Ambient Noise Level: 40.5 dB(A)

Accelerating from Constant Speed Curb (Right) Side		Accelerating from Constant Speed Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	68.0	1	70.3
2	68.8	2	69.0
3	69.9	3	69.9
4	69.7	4	69.1
5	69.1	5	69.8
6	N/A	6	N/A
7	N/A	7	N/A
8	N/A	8	N/A
9	N/A	9	N/A
10	N/A	10	N/A
Average of two highest actual noise levels = 69.8 dB(A)		Average of two highest actual noise levels = 70.1 dB(A)	

Final Sound Level Meter Calibration Check: 93.7 dB(A)

Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Standstill

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 32	Humidity (%): 86
Wind Speed (mph): Calm	Wind Direction: N
Barometric Pressure (in.Hg): 30.20	

Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■

Initial Sound Level Meter Calibration: 93.7 dB(A)

Exterior Ambient Noise Level: 41.4 dB(A)

Accelerating from Standstill Curb (Right) Side		Accelerating from Standstill Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	68.7	1	69.6
2	70.2	2	70.0
3	69.3	3	70.0
4	69.1	4	69.7
5	69.5	5	69.9
6	N/A	6	N/A
7	N/A	7	N/A
8	N/A	8	N/A
9	N/A	9	N/A
10	N/A	10	N/A
Average of two highest actual noise levels = 69.9 dB(A)		Average of two highest actual noise levels = 70.0 dB(A)	

Final Sound Level Meter Calibration Check: 93.7 dB(A)

Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Stationary

Bus Number: 1606	Date: 01-16-17
Personnel: S.R., E.D. & C.S.	
Temperature (°F): 33	Humidity (%): 86
Wind Speed (mph): Calm	Wind Direction: Calm
Barometric Pressure (in.Hg): 30.20	
Initial Sound Level Meter Calibration: 93.7 dB(A)	
Exterior Ambient Noise Level: 41.9 dB(A)	

Accessories and Air Conditioning ON

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side dB(A)
		Measured	Measured
Low Idle	600	48.0	49.6
High Idle	N/A	N/A	N/A
Wide Open Throttle	2,900	68.6	69.7

Accessories and Air Conditioning OFF

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side dB(A)
		Measured	Measured
Low Idle	600	48.0	48.8
High Idle	N/A	N/A	N/A
Wide Open Throttle	2,900	68.8	69.8

Final Sound Level Meter Calibration Check: 93.7 dB(A)

Comments: None noted.

7.2 EXTERIOR NOISE TESTS



TEST BUS UNDER GOING
EXTERIOR NOISE TESTING



8. EMISSIONS TEST – DYNAMOMETER-BASED EMISSIONS TEST USING TRANSIT DRIVING CYCLES

8-I. TEST OBJECTIVE

The objective of this test is to provide comparable emissions data on transit buses produced by different manufacturers. This chassis-based emissions test bears no relation to engine certification testing performed for compliance with the Environmental Protection Agency (EPA) regulation. EPA's certification tests are performed using an engine dynamometer operating under the Federal Test Protocol. This emissions test is a measurement of the gaseous engine emissions CO, CO2, NOx, HC and particulates (diesel vehicles) produced by a vehicle operating on a large-roll chassis dynamometer. The test is performed for three differed driving cycles intended to simulate a range of transit operating environments. The cycles consist of Manhattan Cycle, the Orange County Bus driving cycle, and the Urban Dynamometer Driving Cycle (UDDS). The test is performed under laboratory conditions in compliance with EPA 1065 and SAE J2711. The results of this test may not represent actual in-service vehicle emissions but will provide data that can be used by recipients to compare buses tested under different operating conditions.

8-II. TEST DESCRIPTION

This test is performed in the emissions bay of the LTI Vehicle Testing Laboratory. The Laboratory is equipped with a Schenk Pegasus 300 HP, large-roll (72 inch diameter) chassis dynamometer suitable for heavy-vehicle emissions testing. The dynamometer is located in the end test bay and is adjacent to the control room and emissions analysis area. The emissions laboratory provides capability for testing heavy-duty diesel and alternative-fueled buses for a variety of tailpipe emissions including particulate matter, oxides of nitrogen, carbon monoxide, carbon dioxide, and hydrocarbons. It is equipped with a Horiba full-scale CVS dilution tunnel and emissions sampling system. The system includes Horiba Mexa 7400 Series gas analyzers and a Horiba HF47 Particulate Sampling System. Test operation is automated using Horiba CDTCS software. The computer controlled dynamometer is capable of simulating over-the-road operation for a variety of vehicles and driving cycles.

The emissions test will be performed as soon as permissible after the completion of the GVW portion of the structural durability test. The driving cycles are the Manhattan cycle, a low average speed, highly transient urban cycle (Figure 1), the Orange County Bus Cycle which consists of urban and highway driving segments (Figure 2), and the EPA UDDS Cycle (Figure 3). An emissions

test will comprise of two runs for the three different driving cycles, and the average value will be reported. Test results reported will include the average grams per mile value for each of the gaseous emissions for gasoline buses, for all the three driving cycles. In addition, the particulate matter emissions are included for diesel buses, and non-methane hydrocarbon emissions (NMHC) are included for CNG buses. Testing is performed in accordance with EPA CFR49, Part 1065 and SAE J2711 as practically determined by the FTA Emissions Testing Protocol developed by West Virginia University and Penn State University.

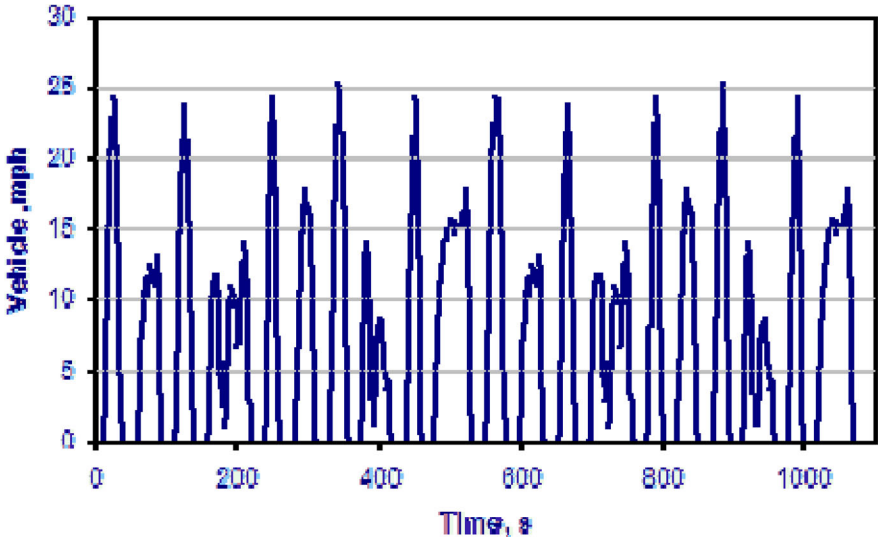


***Figure 1**. Manhattan Driving Cycle (duration 1089 sec, Maximum speed 25.4mph, average speed 6.8mph)*

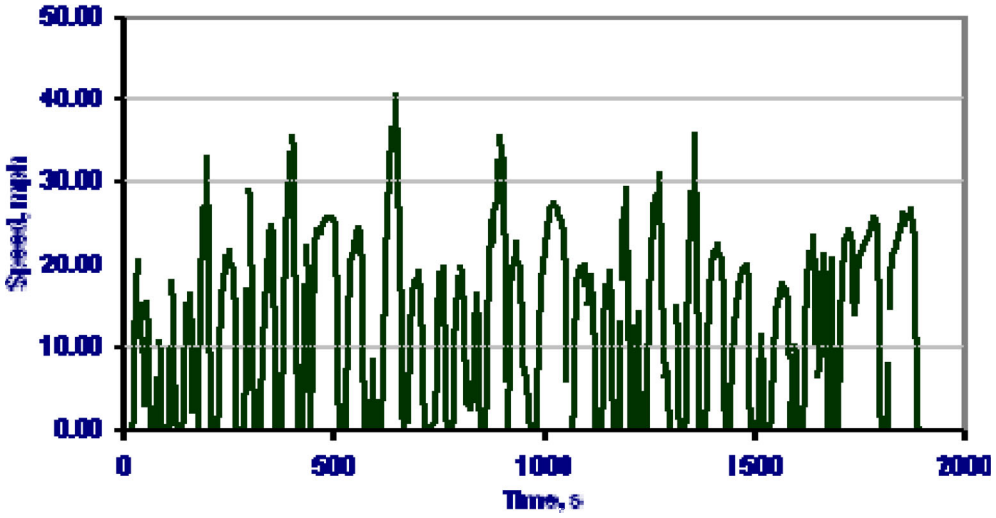


***Figure 2**. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41mph, Average Speed 12mph)*

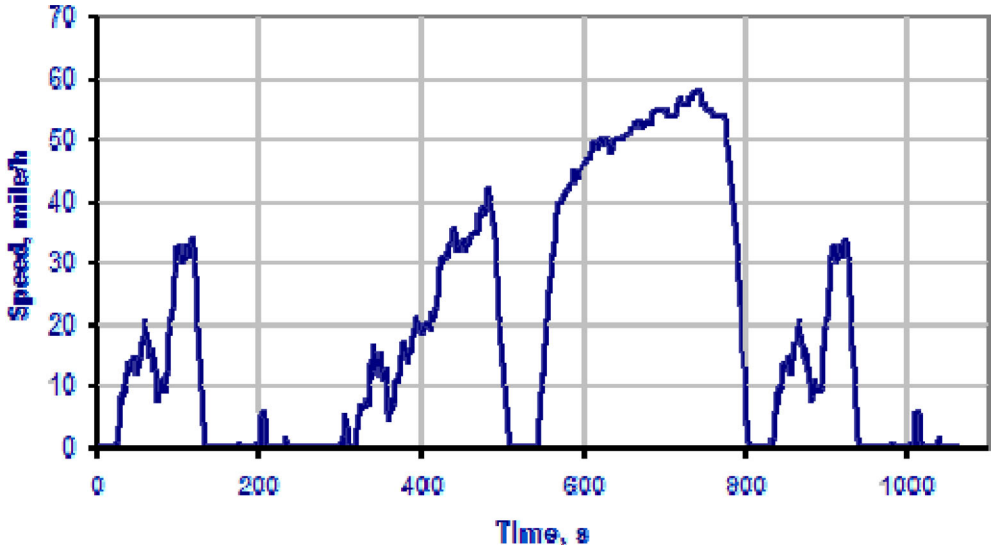


***Figure 3**. HD-UDDS Cycle (duration 1060seconds, Maximum Speed 58mph, Average Speed 18.86mph)*

8-III. TEST ARTICLE

The test article is a Glaval Bus, a Division of Forest River, model Concorde II transit bus equipped with diesel fueled ford Motor Co. model 6.7 L Powerstroke engine. The bus was tested on February 15, 2017.

8-IV. TEST EQUIPMENT

Testing is performed in the LTI Vehicle Testing Laboratory emissions testing bay. The test bay is equipped with a Schenk Pegasus 72-inch, large-roll chassis dynamometer. The dynamometer is electronically controlled to account for vehicle road-load characteristics and for simulating the inertia characteristics of the vehicle. Power to the roller is supplied and absorbed through an electronically controlled 3-phase ac motor. Absorbed power is dumped back onto the electrical grid.

Vehicle exhaust is collected by a Horiba CVS, full-flow dilution tunnel. The system has separate tunnels for diesel and gasoline/natural gas fueled vehicles.

In the case of diesel vehicles, particulate emissions are measured gravimetrically using 47mm Teflon filters. These filters are housed in a Horiba HF47 particulate sampler, per EPA 1065 test procedures.. Heated gaseous emissions of hydrocarbons and NOx are sampled by Horiba heated oven analyzers. Gaseous emissions for CO, CO2 and cold NOx are measured using a Horiba Mexa 7400 series gas analyzer. System operation, including the operation of the chassis dynamometer, and all calculations are controlled by a Dell workstation running Horiba CDCTS test control software. Particulate Filters are weighed in a glove box using a Sartorius microbalance accurate to 1 microgram.

8-V. TEST PREPARATION AND PROCEDURES

All vehicles are prepared for emissions testing in accordance with the Fuel Economy Pre-Test Maintenance Form. (In the event that fuel economy test was performed immediately prior to emissions testing this step does not have to be repeated) This is done to ensure that the bus is tested in optimum operating condition. The manufacturer-specified preventive maintenance shall be performed before this test. The ABS system and when applicable, the regenerative braking system are disabled for operation on the chassis dynamometer. Any manufacturer-recommended changes to the pre-test maintenance procedure must be noted on the revision sheet. The Fuel Economy Pre-Test Inspection Form will also be completed before performing. Both the Fuel Economy Pre-Test Maintenance Form and the Fuel Economy Pre-Test Inspection Form are found on the following pages.

Prior to performing the emissions test, each bus is evaluated to determine its road-load characteristics using coast-down techniques in accordance with SAE J1263. This data is used to program the chassis dynamometer to accurately simulate over-the-road operation of the bus.

Warm-up consists of driving the bus for 20 minutes at approximately 40 mph on the chassis dynamometer. The test driver follows the prescribed driving cycle watching the speed trace and instructions on the Horiba Drivers-Aid monitor which is placed in front of the windshield. The CDCTS computer monitors driver performance and reports any errors that could potentially invalidate the test.

All buses are tested at half seated load weight. The base line emissions data are obtained at the following conditions:

1. Air conditioning off
2. Evaporator fan or ventilation fan on
3. One Half Seated load weight
4. Appropriate test fuel with energy content (BTU/LB) noted in CDTCS software

5. Exterior and interior lights on
6. Heater Pump Motor off
7. Defroster off
8. Windows and Doors closed

The test tanks or the bus fuel tank(s) will be filled prior to the fuel economy test with the appropriate grade of test fuel.

8-VI DISCUSSION

The following Table 1 provides the emissions testing results on a grams per mile basis for each of the exhaust constituents measured and for each driving cycle performed.

TABLE 1 Emissions Test Results

Test Completed at Half SLW: 21,310			
Driving Cycle	**Manhattan**	**Orange County Bus**	**UDDS**
CO_2, gm/mi	2,881	1,497	1,229
CO, gm/mi	0.40	0.10	0.04
THC, gm/mi	1.60	0.02	0.01
CH_4, g/mi	1.33	0.01	0.01
NO_x, gm/mi	1.07	0.80	0.61
Particulates. gm/mi	0.005	0.002	0.002
Fuel consumption mpg	3.53	6.80	8.28

FOREST RIVER BUS

2367 CENTURY DRIVE · GOSHEN, IN 46528 · 1.800.348.7440

March 10, 2022

To Whom it May Concern,

This is to inform all interested parties that the authorized Startrans dealer for Fort Bend County RFP 22-034 is:

Creative Bus Sales
4955 W. Northgate Dr
Irving, TX 75062

Please let us know if there are any questions.

Sincerely,

Mike Anglemyer
Government Bids

U.S. Department
Of Transportation
**Federal Transit
Administration**

Headquarters

East Building, 5th Floor – TCR
1200 New Jersey Avenue, SE
Washington, DC 20590

August 31, 2021

Donall Hasty
Forest River: Elkhart Coach, Glaval Bus,
Starcraft, StarTrans Bus, Van, ElDorado-KS
Lone Star Van, Champion Bus
2367 Century Drive
Goshen, IN 46528

Re: TVM DBE Goal Concurrence/Certification Letter – Fiscal Year 2022

Dear Mr. Hasty:

This letter is to inform you that the Federal Transit Administration's (FTA) Office of Civil Rights has received Forest River's Disadvantaged Business Enterprise (DBE) goal and methodology for FY 2022 for the period of October 1, 2021–September 30, 2022. This goal submission is required by the U.S. Department of Transportation's DBE regulations at 49 CFR Part 26 and must be implemented in good faith.

We have reviewed your firm's FY 2022 DBE goal and determined that it complies with DOT's DBE regulations. Your firm is eligible to bid on FTA-funded transit contracts. This letter or a copy of the TVM listing on FTA's website may be used to demonstrate your firm's compliance with DBE requirements when bidding on federally funded vehicle procurements.

FTA reserves the right to remove/suspend this concurrence if your DBE program or FY 2022 DBE goal is not implemented in good faith. In accordance with this good faith requirement, you must submit your DBE Uniform Report to FTA by December 1, 2021. This report should reflect all FTA-funded contracting activity for the second period of FY 2021 (i.e., from April 1 to September 30).

Also note that your FY 2023 DBE goal methodology must be submitted to FTA by August 1, 2022. Any significant updates to the program plan must be submitted to FTA as they occur. If you have any questions, please contact the FTA DBE Team via email at *FTATVMSubmissions@dot.gov*.

Sincerely,

John Day
Program Manager
Office of Civil Rights

SARA REGISTRAR™

Certificate of Registration

This is to certify the Quality Management System of:

FOREST RIVER MANUFACTURING, LLC

Division 5

Location Addresses:

Starcraft Bus & Eldorado Bus
(Commercial Bus)
2367 Century Drive
Goshen, IN 46528

Forest River Van
2408 Century Drive
Goshen, IN 46528

StarTrans Bus and Glaval Bus
2412 Century Drive
Goshen, IN 46528

Part Sales and Customer Service
2372 Century Drive
Goshen, IN 46528

has been assessed and found to be in compliance with the requirements of

ISO 9001:2015

for the following scope:

Design, Manufacturing, Sales, and Administration of Commercial and Government Buses and Vans

Certificate Number: **SARA-2006-CA-0031-B**

Originally Registered:
January 26, 2009

Latest Issue:
July 1, 2021

Expiry Date:
January 25, 2024

President, SARA Registrar

Standards American Registrations Authority REGISTERED

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

IAS ACCREDITED Management Systems Certification Body MSCB-194

This registration is subject to the company maintaining its system to the required standard which will be monitored annually by SARA Registrar. This certificate remains the property of Standards American Registrations Authority (SARA Registrar) and shall be returned immediately upon request.
SARA Registrar Headquarter Mailing: 1807H Santa Rita Road, #175, Pleasanton, CA 94566

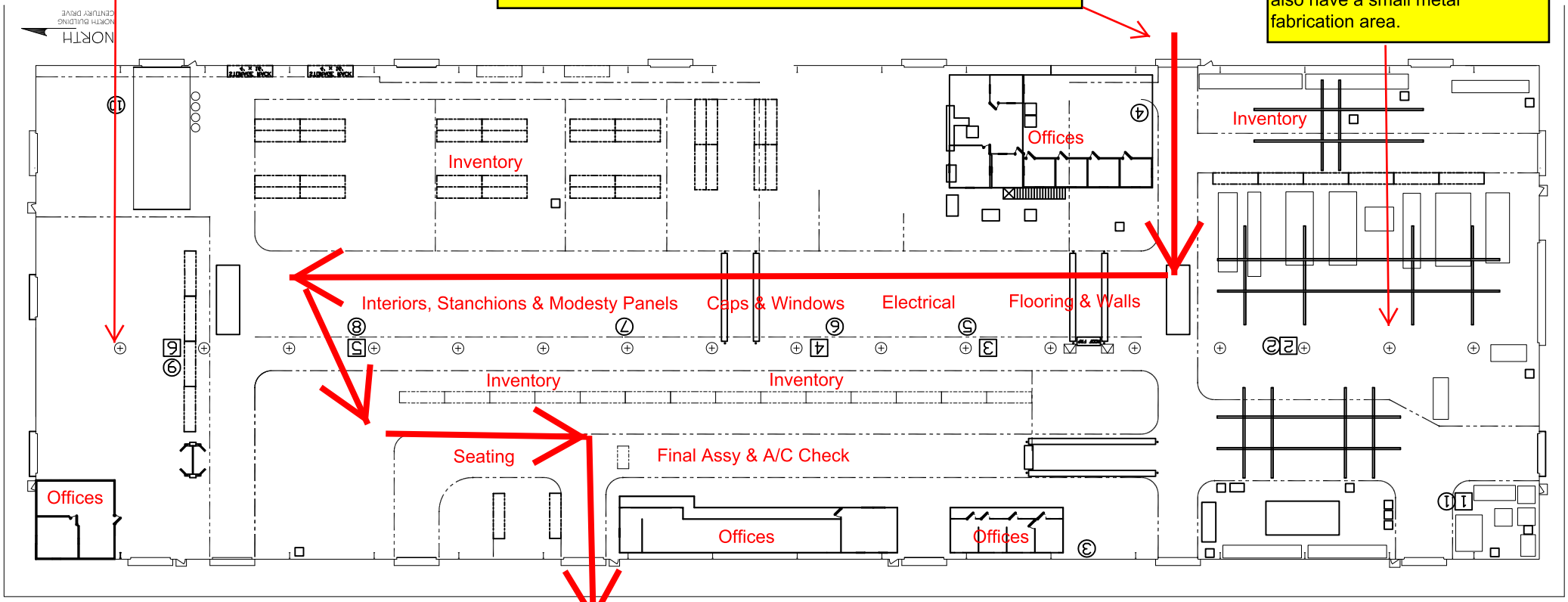
FOREST RIVER BUS

PRODUCTION PLANT 5A

This end of the building we call Float. It is where the buses are cleaned and all final work-off items are performed. Upon final Quality release from this area, units are ready to ship.

The long arrow below shows the main production line area. Units are run "side saddle" on rollers down the line. Fully loaded, the line holds 33 units. .

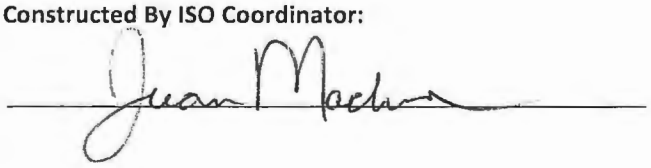
This area contains the weld shop, primer paint booth, chassis prep and body to chassis setting stations. Battery boxes and under-frame electrical run. We also have a small metal fabrication area.



Units exit from the line here and either wait for Float or go to paint. Between here and Float, Road and Water Tests are performed.

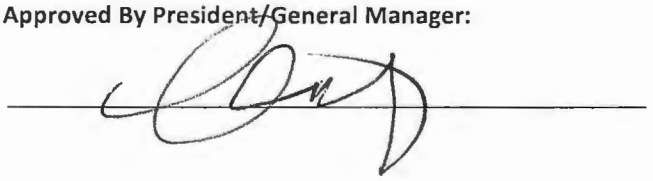
Signature Page

Constructed By ISO Coordinator:



2-6-17
Date

Approved By President/General Manager:



2/06/17
Date

Revision History

Rev Number	Rev Description	Effective Date
A	Initial Release	2/06/2017

— Proprietary Document — Disclosure Restricted To Employees and Authorized Holders —

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To verify the controlled version, or to obtain a copy, please contact the ***ISO Coordinator***.

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Organizational Introduction

The purpose of the Organizational Manual is to ensure the organization's commitment towards maintaining an internationally recognized Quality Management System and to provide a concise reference and organizational context that reflects the current operating practices. The organizational manual references documented information defined herein by means of process procedures, documents, flow charts, forms and records. This documented information defines the responsibilities, interactions and essential controls that must be exercised in order to carry out the various activities of planning, performing, measuring and analyzing to achieve an environment of continuous improvement.

Improvement efforts of the organization are to assure all requirements are met and the end result of the system meeting or exceeding organizational expectations with a focus on customer satisfaction.

The policy and documented information referenced in this organizational manual are designed to target the requirements of the ISO9001-2015 standard.

Organization Background

The organization is committed to continuously improving its quality management practices to improve product quality, to enhance customer satisfaction, and to maintain and build market share. To achieve our quality objectives, we have implemented a Quality Management System (QMS) based on the ISO 9001:2015 International Standard.

Organizational Manual Issue and Revision

The ISO Coordinator is responsible for the issue and revision of the Organizational Manual.

The Organizational Manual is reviewed periodically to ensure its conformance to current international standards as well as customer, organization and corporate requirements.

A revision number indicates a revision to the Organizational Manual, with each revision canceling and replacing the previous issue. The revision letter and date shown on each page indicate the current status of this manual. The ISO Coordinator and President/General Manager approve all revisions.

1 Organizational Application

The organization will apply the ISO 9001:2015 standards to all services provided and products developed.

2 Organizational Normative Reference

The organization will enforce all latest published ISO 9001:2015 standards.

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3 Organizational Terms and Definitions

Term	Meaning
Buyer.....	is a representative of the organization purchasing function that processes Material Requisitions, generates Purchase Orders, and places orders with vendors. The Buyer monitors vendor performance and works with Requestors and Vendors to address Vendor Corrective Action Requests. Vendors are evaluated and controlled according to requirements of the organization Purchasing Department.
Corrective Action Request (CAR)..	is used to document, control and correct nonconformities within the division or organization.
Customer.....	is the organization or person that receives a product or service.
Date (Last Update).....	is a field is within the document header that indicates the date of the document revision, i.e. the date when the format and/or content of the document was last changed/updated.
Department Managers.....	are responsible for operations and performance of processes.
Division 5.....	is the part of the organization that is controlled by ISO which encompasses both Starcraft Bus and StarTrans Bus.
Documents.....	in ISO 9001 usage, generally consist of permanent documentation describing or defining systems, processes, procedures, and products. Examples include product specification and Quality Manuals.
Facility Coordinator.....	maintains the tracking of all properties.
President/General Manager.....	is responsible for the overall operations of the division.
Human Resources.....	personnel support employees by administering compensation and benefit packages, as well as policies that promote individual and corporate growth.
Infrastructure.....	is the set of facilities, which may be under the control of the customer or the corporation.
ISO.....	is the International Organization for Standardization, a worldwide federation of national standards bodies formed in 1947.
ISO Coordinator.....	is the organization employee who has been assigned to support and maintain the organization ISO processes. The duties include, but are not limited to: coordination, submission and tracking of ISO documents, maintaining storage of ISO records.
IT Personnel.....	administer policies that protect and preserve administrative and corporate information and computing resources in accordance with the organization corporate policy.

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Term	Meaning
Management Review.....	is the review of the quality system by management to ensure the quality system remains suitable and effective.
Manufacturing.....	is a set of processes that transform requirements into specified characteristics or into the specifications of a product process or system.
Nonconformity.....	is the non-fulfillment of a requirement.
President.....	is responsible for the overall operations for multiple divisions.
Preventive Action.....	is the action taken to eliminate the cause of a potential nonconformity or other undesirable situation.
Process.....	is the set of interrelated or interacting activities that transforms inputs into outputs.
Process Control.....	is the identification of and action on all identified factors affecting process variability, proper maintenance of equipment, use of statistical process control methods, and degree of adherence to valid work instructions.
Process Owner(s).....	are personnel responsible for the development and maintenance of Procedures and Work Instructions.
Product Designer.....	performs product design, development, trial activities, and other assignments as directed by Manager.
Purchasing	is responsible for material purchase and vendor selection.
Quality.....	is the degree to which a set of inherent characteristics fulfills requirements.
Quality Assurance	is responsible for the QA.
Quality Audit.....	is the systematic, independent, and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which agreed criteria are fulfilled.
Quality Management.....	is the coordinated activities to direct and control an organization with regard to quality. Direction and control with regard to quality generally includes establishment of the quality policy, quality objectives, quality planning, quality control, quality assurance, and quality improvement.
Quality Management System.....	is a set of interrelated or interacting processes with regard to quality. It generally includes establishment of the quality policy, quality objectives, quality planning, quality control, quality assurance, and quality improvement.
Quality Manual.....	is the document specifying the Quality Management System of an organization.
Quality Policy.....	represents the overall intentions and direction of an organization, with respect to quality, as formally expressed by senior management.

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Term	Meaning
Records.....	are the documents providing current and historical evidence of activities conducted. Examples include inspection and test records, records confirming traceability, evidence of certification, and/or preventive and corrective action. Electronic data are acceptable as a record.
Retention.....	refers to documentation that is retained by the appropriate program for an indefinite period. Upon completion of the program, this documentation may be archived or destroyed. In many cases, this documentation reflects the history of the program.
Revision.....	is a field located within the ISO document header that indicates the version of the document. The revision will be changed to the next sequential letter whenever the format or content of the document is changed. In addition, the date field will be updated to indicate the date of the revision.
Statistical Process Control.....	is the application of statistical techniques to the control of processes.
Supervisor.....	is a organization employee who has been assigned to manage a specific area or department.
Supplier.....	is the organization or person that provides a product.
Technician.....	performs technical activities consisting of, but not limited to, fabrication, assembly, and testing as assigned by the Supervisor and/or Dept. Manager in order to meet program requirements.
Traceability.....	is the ability to trace the history, application, location or compliance of that which is under consideration.
Training.....	is the result of teaching and learning, so as to be fitted, qualified, or proficient in a specific task.
Work Environment.....	is the set of conditions under which work is performed. Conditions include physical, social, psychological, and environmental factors such as temperature, recognition schemes, and ergonomics.

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4 Organizational Context

4.1 Organizational Context

Top and senior level management will identify the internal and external influences of the organization that may positively or negatively affect the organizations purpose, strategic direction and/or impede its ability to achieve the intended results of the Quality Management System.

Top management will achieve this by outlining the interaction of those influences on the QMS through process charts below under references.

Reference:

Organizational Context: QMS

Chart QMS-01-01 Organizational External and Internal Influences

Chart QMS-01-02 QMS Process Interaction of Influences

Chart QMS-01-03 Internal Interaction Sequence

Chart QMS-01-04 Documentation Requirements

4.2 Interested Parties

The organization shall determine interested parties based on their effect on the organization and meeting customer requirements and expectations. When determining interested parties, the organization shall consider:

- Interested Parties that are relevant to the QMS
- External Parties that are relevant to the QMS

The organization shall monitor and review information regarding these interested parties and their requirements. Interested parties have been determined and are as follows:

- Dealers
- Retail Customers
- Vendors
- Employees

Reference:

Organizational Context: Interested Parties

Chart QMS-01-02 Process Interaction of Influences

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4.3 Quality Management System Scope

The organization, located in Indiana has developed this Quality Manual, associated procedures, work instructions and forms, using the ISO 9001:2015 Standard. The Quality Manual is to be used to ensure that the services provided and the products developed by the organization meet customer requirements and regulatory statutes.

Rigorous application of the organization's Quality System will ensure that customer and statutory requirements are met fully and that the processes utilized will be continually improved.

The organization is implementing and maintaining a Quality Management System as stated below:

Reference Standard	Exclusion
ISO 9001:2015	None

The organization's documented Quality Management System includes:

- A documented Quality Policy, as well as specific measurable Quality Objectives for customer satisfaction and product quality;
- An Organizational Manual;
- Documented procedures, including those required by the ISO 9001:2015 standard: Control of Documents, Control of Records, Internal Audit, Control of Nonconforming Product, Corrective Action and Preventive Action;
- Documents required by the organization to ensure an effective planning operation and control of its processes; and
- Quality records required by ISO 9001:2015.

4.4 General Requirements

The organization has established a documented and implemented Quality Management System and shall continually improve its effectiveness in accordance with the ISO 9001:2015 requirements.

The organization has completed the following:

- Identified the necessary processes, interface, interaction, and sequences (Input and Output of processes) for the operation of the business through the overall business process.
- Determined the criteria and methods required for monitoring processes and performance through the use of procedural and other documents relevant to the quality processes to ensure the effectiveness of the operation and these processes.
- Assigned employee responsibilities and authorities to complying with all ISO requirements and continually improve the effectiveness of the Quality System.

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- Allocated its resources, including manpower, facilities, and documentation information in terms of process procedures, forms and work instructions in order to support operational processes and implement any changes needed to ensure that the processes are geared towards achieving planned results and continual improvement.
- Identified processes necessary to determine and address risks and opportunities
- Identified resources in terms of reports and records to be maintained to measure and monitor (where applicable) processes and to analyze its processes.

Where *Forest River – Division 5* chooses to outsource any process that affects product conformity to requirements, *Forest River – Division 5* ensures control over such processes. The type and extent of control to be applied to these outsourced processes are defined within the quality management system.

Processes needed for the quality management system referred to above include processes for management activities, provision of resources, product realization, and measurement, analysis, and improvement.

An outsourced process is identified as one being needed for the *Forest River – Division 5* quality management system, but chosen to be performed by a party external to the organization.

Ensuring control over outsourced processes does not absolve *Forest River – Division 5* of the responsibility of conformity to all Customer, statutory, and regulatory requirements. The type and extent of control to be applied to the outsourced process can be influenced by factors such as

- the potential impact of the outsourced process on the *Forest River – Division 5* capability to provide product that conforms to requirements,
- the degree to which the control for the process is shared;
- the capability of achieving the necessary control through the application of clause 8.4.3 (Referred to in procedure PUR-01)

Outsourcing a process to another organization typically involves the purchase of those services; as a result, compliance with Purchasing, including the controls mentioned in clause 7.4 apply equally to the supplier selected to perform the outsourced process.

Reference:

Organizational Context: Sequence and Interactions

Procedure QMS-01 Understanding the Organization and its Context

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5 Organizational Leadership

5.1 Leadership and Commitment

5.1.1 General

Demonstrating commitment to the development and continual improvement of the Quality Management System is the responsibility of the Senior Management team of the organization.

- Has established a quality policy to communicate to all employees the importance of applying the ISO standards to meet customer requirements;
- Has defined quality objectives to assess the effectiveness of the Quality Management System to provide direction and achieve desired results;
- Conducts periodic management reviews to ensure that the quality policy and objectives remain relevant and suitable with respect to current operation of the organization and that the resources needed to support these objectives are sufficient and appropriately allocated; and
- Ensures that customer, statutory and regulatory requirements are determined, fulfilled and communicated.

Reference:

Organizational Leadership: Leadership and Commitment

Procedure LDR-01; Leadership and Commitment

Chart LDR-01-01; Organizational Authority Tree

5.1.2 Customer focus

Top Management will demonstrate active involvement in establishing and maintaining mutually beneficial relationships between the organization and its customers. The organization will establish and maintain procedure(s) for communicating with selected customers.

5.2 Quality Policy

5.2.1 Establish the quality policy

Forest River – Division 5's has established quality policies for Starcraft Bus and StarTrans Bus and they are as follows:

"Starcraft Bus is committed to being the leader in the small and mid-size bus market by meeting or exceeding customer requirements and providing continuous improvement."

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"StarTrans Bus is committed to continuous improvement of quality, service and safety through a partnership of customer and employee communication and innovation."

5.2.2 Communicate the quality policy

Senior Management has determined the channels and processes necessary to facilitate internal communication for effective implementation of the Quality Management System.

Organizational goals and customer expectations are conveyed through policy and objective statements. Periodic meetings are held with the President, General Manager, Department Managers, Supervisors and relevant personnel to discuss the latest issues relating to operation. Results of discussion, testing, and inspection are channeled to the appropriate personnel through reports, records, and meeting minutes as necessary. Other information is conveyed through memos and verbal conversation.

These polices will be communicated throughout the organization via various means which include, but are not limited to:

- Plant banners that are appropriately visible
- Forest River – Division 5 employee training program

5.3 Organizational Roles, Responsibilities and Authorities

The organization President/General Manager establishes the Quality Policy and approves the Quality Management System.

The ISO Coordinator of the organization is authorized to document, implement, and maintain the Quality Management System described in this manual. The ISO Coordinator communicates quality goals to the organization and facilitates discussion of the Quality Management System with senior management via Management Reviews.

6 Organizational Planning

6.1 Assessment of Risks and Opportunities

The organization shall consider planning and acting to address issues of internal and external risks and opportunities. Consideration of risks and opportunities are ones that may:

- Negatively impact the QMS
- Improve on positive effects of the QMS
- Reduce undesirable effects of the QMS
- Attain continuous improvement

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The organization shall plan how to address, what to address and evaluate actions of addressing risk and opportunities. Management has determined areas of risk and opportunities to be reviewed are:

- Warranty Reporting
- Dealer Survey
- Customer Feedback
- Vendor Evaluations
- Internal Audits
- Quality Objectives
- Corrective Actions

Documented actions are taken to address potential risks and opportunities to address or prevent occurrence. A documented procedure is established for action that includes the following activities:

- Identify potential risks and opportunities issues;
- Evaluate scope of issues;
- Evaluate whether or not there is a need to implement action(s);
- Implement the action(s);
- Verify the effectiveness of the action(s) taken.

Reference:

> *Organizational Planning: Risks and Opportunity Assessment*
> *See Procedure RAO-01; Risks and Opportunity Assessment*
> *See Procedure EVS-01; Evaluation of Customer Satisfaction*
> *See Procedure EVD-01; Evaluation of Operational Data*
> *See Procedure VQC-01; Purchasing Control of Vendor Qualifications*
> *See Procedure QOB-01; Determining Quality Objectives*
> *See Procedure INA-01; Internal Audits*

6.2 Quality Objectives

The organization has established Quality Objectives as stated in procedure QOB-01. The Management Representative maintains these Quality Objectives in coordination with Senior Management and Department Managers. The Quality Objectives are reviewed, measured, and analyzed during Management Reviews, Project Review, and at other times as applicable.

In order to achieve the Quality Objectives, the organization shall:

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- Implement and maintain a Quality Management System in accordance with ISO 9001:2015.

- Strive toward continual improvement in its operations and ensure that such improvements are identified and communicated effectively.

Ensure all employees are complying with the Quality Management System and are dedicated to continually improving the effectiveness of the Quality System. In order to gauge the effectiveness of the Quality Management System, the organization Senior Management shall:

- Ensure that the Quality Policy and Objectives are communicated to and understood by the employees.

- Periodically review the performance indicators and the Quality Objectives with department managers and quality steering committee, and determine corrective action plans to remedy any deficiencies.

Reference:

Organizational Quality Objectives: Planning and Achievement

Procedure QOB-01; Planning and Achieving Quality Objectives

6.3 Planning of Changes

If any changes should be necessary to the quality management system, the organization will refer to the following guidelines:

- Define the purpose of the change
- Consider the integrity of the system and the potential impact positive and/or negative
- Are additional or different resources needed to accomplish the change
- Define the scope of authorities and responsibilities for those affected
- Ensure approval is granted prior to implementing

Reference:

Organizational Planning Process

Procedure QMC-01; Quality Management Changes

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7 Organizational Support

7.1 Resource

7.1.1 General

In order to implement, maintain, and continually improve the Quality Management System, the organization shall determine and provide the necessary internal and external resources, including manpower, infrastructure, measuring equipment and work environment, geared towards fulfilling customer satisfaction.

7.1.2 People

Personnel performing work affecting conformity to product requirements shall be competent on the basis of appropriate education, training, skills and experience.

Conformity to product requirements may be affected directly or indirectly by personnel performing any task within the quality management system.

Forest River – Division 5 determines the necessary competence for personnel performing work affecting conformity to product requirements. Externally, Forest River, Inc. provides the necessary corporate screening of applications prior to the hiring of personnel.

Where applicable, *Forest River – Division 5* provides training or takes other actions to achieve the necessary competence.

Training Records are maintained by the employee representative and available for review

Reference:

Organizational Support: People Resources

Procedure PPL-01; Personnel of the Quality Management System

7.1.3 Infrastructure

The organization shall identify, provide, and maintain the infrastructure needed to achieve product conformity. This infrastructure includes workspace, associated utilities, process equipment, and supporting services. Externally, Forest River, Inc. IT provides the necessary corporate back of the network drives where all records are held.

Reference:

Organizational Support: Infrastructure Resources

Procedure INF-01; Infrastructure Resources

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7.1.4 Work environment

The organization shall identify and manage the work environment needed to achieve product conformity.

The term "work environment" relates to conditions under which work is performed including physical, psychological, and social environmental, as well as other factors (such as noise, temperature, humidity, lighting, or weather).

Reference:

Organizational Support: Work Environment

Procedure ENV-01; Work Environment Resources

7.1.5 Monitoring and measuring resources

The organization shall determine the monitoring and measurement devices (i.e., test equipment) necessary to ensure product conformity and ensure that required test equipment are calibrated and/or certified to ascertain their accuracy. Calibration of test equipment used by the organization is performed externally or internally whose calibration masters can be traced and approved in accordance with national and/or international standards.

Confirmation of the ability of computer software to satisfy the intended application would typically include its verification and configuration management to maintain its suitability for use.

Reference:

Organizational Support: Monitoring Measuring and Testing Equipment

Procedure CBE-01; Calibration Equipment Monitoring

7.1.6 Organizational knowledge

Employees are provided with the necessary knowledge through training to equip them with the basic skills to carry out their work effectively during their organizational orientation. The Managers identify employee training needs and training is provided through internal and/or external means.

Where by the knowledge of the work required of an employee to carry out a process is new or undefined, the organization may take the necessary actions to capture undefined knowledge as determined by team leaders or managers to address changing needs or trends of the process

Knowledge may be captured and maintained by way of but not limited to the creation or revisions of process procedures, work instructions, process control documents or forms.

Reference:

Organizational Support: Organizational Knowledge

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* *See Procedure ROA-01; Risk and Opportunity Action Plan*
* *See Procedure CPT-01; Competence of Personnel Resources*

7.2 Competence

To ensure that job competency is satisfied, new hires are selected based on their qualification and/or experience as required by the position according to the job requirements stated in the Job Description. New hires undergo employee orientation training. Where applicable, on-the job training is given, based on judgment by the Manager.

Employees are provided with the necessary training to equip them with the basic skills to carry out their work effectively. The Managers identify employee training needs. Training is provided through internal and/or external means.

Reference:

Organizational Support: Organizational Knowledge
Procedure CPT-01; Competence of Personnel Resources

7.3 Awareness

To ensure that employees are informed of the QMS, objectives, and expectations as it relates to job performance and safety requirements, employees are taken through a hire orientation. Employees are made aware of this information at that time.

Employees are provided with the necessary documentation to sign and initial that they have been made aware and understand these requirements.

Reference:

Organizational Support: Organizational Knowledge
Procedure AWR-01; Awareness of Personnel Resources

7.4 Communication

To ensure that communication is satisfied, all department heads, supervisors, and management personnel are made aware of the internal and external communications mapped using the Process Interaction and Organizational Tree charts.

Employees are provided with the necessary documentation to coordinate communication via controlled forms within the QMS

Reference:

Organizational Support: Organizational Knowledge

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Procedure COM-01; Communication of Personnel Resources

7.5 Documented Information

7.5.1 General

Processes are maintained to ensure that documents related to the Quality Management System are properly controlled. The documents include the organizational manual, process procedures, forms, work instructions, reports, charts and specifications.

Forest River – Division 5 ensures that documents of external origin determined to be necessary for the planning and operation of the quality management system are identified and their distribution controlled.

7.5.2 Creating and updating

These documents are drafted by process owners in coordination with the ISO Coordinator, reviewed by experts in the functional areas, and approved prior to issue. Procedures are reviewed periodically for continued applicability and updated as necessary to reflect current practices. When changes are made to these documents, the ISO Coordinator ensures that the document revision status is clearly identified on the documents.

The ISO Coordinator shall ensure that all documents are legible, and readily retrievable.

7.5.3 Control of documented information

The organization maintains a documented procedure for identification, storage, protection, retrieval, retention, and disposition of quality records. These records are maintained for effective operation, traceability, and to demonstrate compliance to its Quality Management System. The records are kept as printed copies (i.e., "hardcopy") and/or in electronic form (i.e., "softcopy").

Records are maintained and controlled.

Records established to provide evidence of conformity to requirements and of the effective operation of the quality management system are controlled.

Records are to remain legible, readily identifiable and retrievable.

Reference:

Document Control Process: Documented Information

Procedure ISO-01; Control of Documented Information

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8 Organizational Operation Control

8.1 Planning and Control

The organization shall plan and develop the processes needed for product realization. The planning of the product realization processes shall be consistent with the Quality Management System.

Senior Management ensures that the planning of the Quality Management System is accomplished to meet the Quality Objectives. Planning of the Quality Management System is carried out at appropriate stages of the product realization process.

In planning Product Realization, the organization determines the following requirements for the product:

- The need to establish processes, documents, and provide resources specific to the product;
- Required verification, validation, monitoring, inspection, and test activities specific to the product and the criteria for product acceptance; and
- Records needed to provide evidence that the realization processes and resulting product meet requirements.
- Establish processes, and documents, and to provide resources specific to the product
- Verification, validation, monitoring, measurement, inspection and test activities specific to the product and the criteria for product acceptance

Operational Planning and Control: Provisions of Product Control
See Clauses 8.2 - 8.7 Below...

8.2 Requirements of Products and Services

8.2.1 Customer communication

Sales and Office departments are responsible for handling communications with customers relating to inquiries for product information, order processing, order amendment, and customer feedback.

8.2.2 Determining Requirements for products and services

The organization shall determine the following requirements relating to product:

- Customer requirements, including those for delivery and post-delivery activities;

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- Requirements not stated by the customer, but necessary to meet intended purpose for use of the product;
- Product-related statutory and regulatory requirements; and
- Organization requirements and policy.

8.2.3 Review of the requirements for products and services

Prior to accepting a customer order, a review of the order requirements, such as price, delivery time, terms, and conditions, is conducted.

- Discrepancies arising from the review shall be resolved with the customer, and
- The organization's capability of meeting the defined requirements is established.

When orders are placed through verbal means, the customer requirements are confirmed in writing before acceptance of the order(s).

8.2.4 Changes to requirements for products and services

When amendments to an order are made, the changes are documented and the relevant documents are modified. The change is conveyed to the related department through revised documents or memos.

Reference:

Operational Planning and Control: Customer Requirements for Products and Services
Procedure SLS-01; Sales Communication of Requirements
Procedure SQO-01; Sales Determination of Requirements
Procedure SOR-01; Sales Review of Requirements
Procedure SCO-01; Sales Changes to Requirements

8.3 Design and Development

8.3.1 General

The Design and Development Procedure documents methods and practices relevant to design and development activities in order to achieve consistent operation and conformity to customer requirements. The documented procedure defines responsibilities of technical personnel involved in design and ensures effective communication and clarity of procedures across the various programs. The documented procedure consists of:

- Planning of stages and controls;
- Input requirements for specific designs;
- Controls to monitor and evaluate results of the design process;
- Outputs meet input requirements and acceptance criteria; and

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- Identifying, reviewing and controlling changes to design and documentation.

Project specific plans may be developed and documented to ensure proper control of product design and related activities.

The outputs of design and development is in a form suitable for verification against the design and development inputs and shall be approved prior to release.

The design output also consider product packaging (when applicable)

Information for production and service provision includes details for the preservation, of product (when applicable)

Reference:

Operational Planning and Control: Design and Development

Procedure ENG-01; Design and Development

Procedure ECN-01; Design and Development Changes

8.4 Control of Externally Provided Processes, Products and Services

8.4.1 General

The organization purchasing function is responsible for selecting and purchasing from suppliers who are able to meet specified purchase requirements, such as price, delivery, quality, etc. Vendors are evaluated and controlled according to processes within the organization Purchasing Department.

8.4.2 Type and extent of control

Upon delivery of products by suppliers, shipping/receiving personnel ascertain that received products/services are in accordance with specifications and established quality parameters when possible. Final quality verification is performed at the line.

Reference:

Operational Planning and Control: Control of External Providers

Procedure VQC-01; Control of Purchasing Process

8.4.3 Information for external providers

Information needed to support the purchasing activities is captured in a Purchase Order and/or other records that specify the terms and conditions for the intended purchase.

Reference:

Operational Planning and Control: Control of Purchasing Information

Procedure PUR-01; Purchasing of External Products and Services

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8.5 Production and Service Provisions

8.5.1 Control of production and service provisions

Process control methods used in product realization include:

- Availability of information that describes the product;
- Where necessary, use of work instructions, specifications, and other information/documents;
- Use of suitable machines and equipment;
- Availability and use of monitoring and measuring devices; and
- Implementation of product release, delivery and post-delivery support activities.
- Where validating the resulting output cannot be verified by subsequent monitoring or measurements
- Control of changes to the production process

Not applicable. Forest River – Division 5 is able to identify processes for Production and Service Provision prior to release of product via monitoring and measuring.

Reference:

Operational Planning and Control: Production and Service Provisions

Procedure PRD-01; Control of Production Provisions

Procedure PRD-02; Control of Work Instructions

8.5.2 Identification and Traceability

Where practical, all material and components, except for common parts and consumables, shall be clearly identified to prevent mix-up and unintended use. Material that has been verified against specific quality assurance requirements shall be clearly identified to indicate the status for use.

Identification is applied from received product to in-process and final product.

Forest River – Division 5 identifies the product status with respect to monitoring and measurement requirements throughout product realization.

Where traceability is a requirement, *Forest River – Division 5* controls the unique identification of the product and maintains records.

Reference:

Operational Planning and Control: Identification and Traceability

Procedure IDT-01; Control of Identification and Traceability

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8.5.3 Property belonging to customers or external providers

The organization shall exercise care with customer property while it is under its control. The organization will identify, verify, and protect customer property provided for use or incorporation into the product. If any customer property is lost, damaged, or otherwise found to be unsuitable for use, this information will be reported immediately to the customer and appropriate records maintained. Action will be taken to reduce further occurrences.

If any customer property is lost, damaged, or otherwise found to be unsuitable for use, *Forest River – Division 5* will report this to the customer and maintain records.

Customer property can include intellectual property and personal data.

Reference:

Operational Planning and Control: Control of Customer Property

Procedure REC-01; Control of External and Customer Property

8.5.4 Preservation

The organization shall ensure that product conformity is maintained throughout the production process until the delivery to its intended destination is completed. Conformance maintenance shall include proper identification, handling, packaging, storage, and protection of the product and the constituent components against loss, damage, and deterioration.

Reference:

Operational Planning and Control: Preservation of Products

Procedure SHP-01; Shipping and Preservation of Products

8.5.5 Post-delivery activities

The organization shall meet requirements for post-delivery communications and activities associated with its products. The following must be considered when determining post-delivery activities:

- Statutory and regulatory requirements,
- Potential undesired consequences associated with the organization's products,
- Customer feedback
- Customer requirements for intended use and maintenance
- Intended lifetime of products

Reference:

Operational Planning and Control: Post-Delivery Activities

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Procedure CSV-01; Customer Service and Post Delivery Activities
Procedure WTY-01; Determination of Product Warranty Statements

8.5.6 Control of changes

The organization shall review and control changes for production and services, to the extent necessary to ensure continuing conformity with requirements

The organization shall retain documented information describing the results of the review of changes, the person(s) authorizing the change, and any necessary actions arising from the review.

Reference:

Operational Planning and Control: Control of Changes
** See Procedure PRD-01; Procedure; Contral of Changes*

8.6 Release of Products and Services

Managers ensure that proper records are kept to demonstrate the evidence of conformity for the monitoring and measurement carried out. Managers shall ensure that results of such activities, such as inspection/test reports, are recorded as evidence of conformity with the acceptance criteria and authorized by the personnel responsible for release of product.

Product release without completion of planned arrangement and endorsement of monitoring and measurement activities is not allowed. However, should circumstances arise where urgent release is required, the approval of department head or other authorized personnel and where applicable, customer approval shall be obtained.

Evidence of conformity with the acceptance criteria will be maintained.

Records will indicate the person(s) authorizing release of product for delivery to the customer.

The release of product and delivery of service to the customer will not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

Reference:

Operational Planning and Control: Release of Products and Services
Procedure QAI-01; Quality Assurance Approvals

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8.7 Control of Nonconforming Outputs

Nonconforming product refers to material, equipment and the organization created product that is out of specification. A documented procedure is established for handling nonconforming product to prevent unintended use.

A documented procedure has been established to define the controls and related responsibilities and authorities for dealing with nonconforming product

Where applicable, *Forest River – Division 5* will deal with nonconforming product by one or more of the ways as described in the referred procedure

Forest River – Division 5 will take action appropriate to the effects, or potential effects, of the nonconformity when nonconforming product is detected after delivery or use has started.

When nonconforming product is corrected it will be subject to re-verification to demonstrate conformity to the requirements.

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, will be maintained.

Reference:

Operational Planning and Control: Control of Quality Nonconforming Outputs

Procedure QCI-01; Quality Control Inspection

9 Organizational Performance Evaluation

9.1 Monitoring, Measuring, Analysis and Evaluation

9.1.1 General

The organization shall plan and implement processes that demonstrate product conformity to the Quality Management System and processes that support continuous improvement of the Quality Management System. These processes include, but are not limited to:

- Monitoring and Measurement of product quality;
- Control of Nonconforming Product; and
- Control of Monitoring and Measuring Devices.

9.1.2 Customer satisfaction

The organization considers customer satisfaction as an important performance indicator of the product quality process. The Dealer Satisfaction Survey (EVS-01-01) is carried out on a periodic basis to capture the feedback from the customer. Customer complaints are

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documented as Customer Corrective Action Requests and attended to at the earliest possible time.

Monitoring customer perception can include obtaining input from sources such as customer satisfaction surveys, customer data on delivered product quality, user opinion surveys, lost business analysis, compliments, warranty claims, reports.

Reference:

Organizational Performance: Customer Satisfaction

Procedure EVS-01; Customer Satisfaction Evaluation

9.1.3 Analysis and evaluation

Suitable methods are applied for monitoring, and where applicable, measurement of the Quality Management System processes, including support processes. These methods shall demonstrate the ability of the processes to achieve planned results. When processes are found to be nonconforming, corrective action shall be taken, as required, to ensure conformity of the process.

When determining suitable methods *Forest River – Division 5* considers the type and extent of monitoring or measurement appropriate to each of its processes in relation to their impact on the conformity to product requirements and on the effectiveness of the quality management system.

Where deemed suitable and useful, data related to the Quality Management System are collected and analyzed to gauge effectiveness and to determine where continual improvement can be made. The data analysis shall include the following areas:

- Customer satisfaction by way of warranty claims
- Product conformance to requirements; and
- Process trends and product characteristics.

Reference:

Organizational Performance: Operational Data Analysis Metrics

Procedure EVD-01; Operational Data Analysis

9.2 Internal Audit

A documented procedure describing the responsibility and requirements for planning and conducting audits, reporting of results, and maintenance of records is established. Internal audits are performed at least once a year to gauge the effectiveness of actual work processes against the requirements of ISO 9001.

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Audit procedures, defining the audit criteria, scope, frequency, and method, shall be planned according to the complexity of the processes. Personnel outside the audit area will be used to perform the audit. Discrepancies arising from the audit are recorded on audit report forms and action taken as required for resolution.

A documented procedure has been established to define the responsibilities and requirements for planning and conducting audits, establishing records and reporting results.

The managers for the area being audited ensure that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes.

Records of the audits and their results are maintained.

Reference:

Organizational Performance: Internal Auditing and Monitoring

Procedure INA-01; Internal Auditing and Monitoring

9.3 Management Review

9.3.1 General

Management shall review the effectiveness and suitability of the Quality Management System at least semi-annually against the quality policy and objectives and ISO 9001 requirements. The ISO Coordinator will maintain all records of this review.

9.3.2 Management review inputs

The review shall cover the following inputs:

- Progress toward achieving the established Quality Objectives,
- Internal and external audit results;
- Customer feedback;
- Process performance and product conformity;
- Status of corrective actions;
- Follow-up actions from previous management reviews;
- Planned changes that could affect the Quality Management System;
- Risks, Opportunities and recommendations for improvement; and
- Need for changes to the Quality Management System, including the Quality Policy and Quality Objectives.

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9.3.3 Management review outputs

Shortcomings in the Quality Management System are being addressed and documented in the Management Review Minutes. Actions and decisions arising from the Management Review shall include:

- Improvement of the effectiveness of the Quality Management System and its processes;
- Improvement of product related to customer requirements; and,
- Resource requirements.
- Action Item List for Departments.

Reference:

Operational Performance: Management Review

Procedure MNG-01; Management System Review

10 Organizational Improvement

10.1 General

10.2 Nonconformity and Corrective Actions

Nonconforming product refers to material, equipment and the organization created product that is out of specification. A documented procedure is established for handling nonconforming product to prevent unintended use.

A documented procedure has been established to define the controls and related responsibilities and authorities for dealing with nonconforming product

Where applicable, *Forest River – Division 5* will deal with nonconforming product by one or more of the ways as described in the referred procedure

Forest River – Division 5 will take action appropriate to the effects, or potential effects, of the nonconformity when nonconforming product is detected after delivery or use has started.

When nonconforming product is corrected it will be subject to re-verification to demonstrate conformity to the requirements.

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, will be maintained.

Corrective action is taken to prevent recurrence upon detection of nonconformities. A documented procedure is established for corrective action that includes the following activities:

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- An investigation will be carried out for nonconformities that warrant corrective action in order to determine the causes;
- Corrective action results will be recorded; and
- Follow-up on the action taken to verify the implemented solution's effectiveness.

Reference:

Organizational Improvement: Nonconforming Material Reporting
Procedure NMR-01; Nonconforming Material Actions
Organizational Improvement: Corrective Action Reporting
Procedure CAR-01; Corrective Action Reporting

10.3 Continual Improvements

The organization shall continually improve on the QMS. Results of monitoring and evaluations shall determine the needs and opportunities for improvement; staying focused on the key areas listed below:

- Customer satisfaction;
- Warranty data mining
- Internal audit;
- Processes; and
- Product quality

Improvement is gained through corrective and preventative actions focusing on the key areas above. Actions are taken to address the threatening issues or potential threatening issues through root cause analysis, accompanied by short and long term solutions.

Reference:

Organizational Improvement: Continual Improvement Reporting
Procedure RAO-01; Risk and Opportunity Assessment
Procedure CAR-01; Corrective Actions

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RAIN BOOTH INFORMATION

Constructed and opened in 2005 as part of a corporate-wide, pre-delivery inspection facility, the Forest River 20 ft. x 50 ft. motorized vehicle rain booth utilized by Forest River Bus offers exceptional performance in the area of water leak detection.

The vehicle rain booth adds front wall nozzles, simulating the pelting of oncoming rain at high-way speeds. The rain booth includes two 1200 gallon recycling tanks and utilizes a 12 horsepower pump with multi-bank filters capable of delivering 40 to 60 p.s.i. That equates to 300 gallons per minute pushed through the spray heads, or the equivalent of a 24 inch-per-hour downpour!



With nozzles directed at the roof, sidewalls, front and undercarriage, nothing goes untouched in our quest for leak elimination. Using both velocity and volume in our test procedure ensures our valuable customers that we are doing the utmost to deliver a leak-free product to them.



FOREST RIVER BUS

2367 Century Drive • Goshen, Indiana 46528 • 800.348.7440 • www.forestriverinc.com

UNDERCOAT PROCESS INFORMATION

Forest River Bus includes an undercoat application with every vehicle produced. The undercoating protects the unit's most exposed areas from moisture, dirt, grime, salt and other weather-related elements. Trained technicians within two undercoating bays apply the undercoating.

Each vehicle is raised using a drive-on ramp lift system in one of the two undercoating bays. Various areas of the body conversion are masked off including, but not limited to: fuel fills, mud flaps, wheel wells, etc. A rust preventative is also added to the bottom edge of the metal skirts if applicable. A spray foam is applied for additional noise reduction as well as body seam sealing. The underbody is then sprayed with a tough, pliable, corrosion protectant material, which incorporates a sound-deadening property at a pressure of 40 psi. The application runs between 45 minutes to 1.5 hours pending vehicle length.

Forest River Bus follows the strict guidelines established by QVM. No undercoating is sprayed within 12" of the exhaust system or on fuel tank(s), brake lines, AC/heater hoses, heat shield, wire harnesses, driveshaft(s), rear suspension or OEM frame rail.

Undercoating data is available upon request.





FOREST RIVER BUS

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GLAVAL CONCORDE II

COMFORT, QUALITY AND DEPENDABILITY

Built on the rugged F650 chassis, the sleek redesigned Concorde II combines dependability and comfort in a seamless fashion, while giving your customers the option of diesel or gas engines. The Concorde II is the first medium-duty F650 product on the market to be offered in both a 96" or 102" wide body, making cramped aisle space a thing of the past. The wide entry door and deep step treads, spacious headroom and numerous configurations make the Concorde II the perfect fit for any customer. Enjoy the Concorde II's new look and feel, while still receiving Glaval's attention to detail and the industry's most comprehensive 5yr/100K mile warranty.



Glaval Bus
A Division Of Forest River, Inc.

GLAVAL CONCORDE II

Standard Exterior Feature Highlights
- Fully welded corrosion-preventative coated aluminized steel cage construction with laminated sidewall structure meeting all applicable FMVSS requirements
- "Starview" drivers visibility window in front of entry door
- Electric actuated passenger entry door with full length glass
- 36" wide x 36" high upper double T-Slider tempered safety glass windows with climate control tint
- Black powder coated steel rear bumper
- Rear mud flaps
- Molded wheel flares
- Pre-painted white galvanized steel sidewalls and skirts
- Fiberglass front and rear caps
- One-piece seamless FRP (fiberglass reinforced plastic) roof
- Breakaway rearview mirrors with built-in convex
- Sealed LED stop, tail, and turn signal lights with reverse lights
- Exterior LED front and rear marker lights

Standard Interior Feature Highlights
- 93" and 99" interior width
- 96" and 102" exterior width
- 81" interior floor to ceiling height with standard floor
- Black slip resistant Gerflor floor covering
- 5/8" marine tech plywood flooring
- Coved flooring to bottom of seat track
- Gray padded vinyl or cloth interior
- White step nosing at passenger door
- 1.25" left hand vertical passenger assist rail at entry door
- LED entry door step well lights
- LED driver and passenger area lighting
- FlexTech Electrical System
- Backup camera system with 7" monitor/rearview mirror combo
- Non-retractable seat belts

Popular Option Highlights
- Stainless steel wheel inserts
- Luggage storage areas (overhead luggage racks with reading lights, interior luggage racks, rear storage area)
- Rear emergency door with window(s)
- Passenger area rear heat and air conditioning
- Passenger grab rails
- Audio and video systems
- Mid back or high back seating
- ADA and FMVSS compliant wheelchair lifts and securement systems
- Fiberglass sidewalls and skirts



28 Passenger 2 Wheelchair
1 Passenger Foldaway and 2 Passenger Flip Seats
Plus Driver



29 Passenger with Rear Luggage Plus Driver



36 Passenger 2 Wheelchair
1 Passenger Foldaway and 2 Passenger Flip Seats
Plus Driver



37 Passenger Plus Driver



39 Passenger with Rear Luggage Plus Driver



45 Passenger Plus Driver

Glaval Bus
A Division Of Forest River, Inc.

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DEALER INFO

Glaval Bus — Pre-Award BUY AMERICA CERTIFICATION

This certifies compliance with FTA Buy America Regulations set forth in 49 C.F.R. § 661.11 for each component that more than 70% of the subcomponents, by cost, are of U.S. origin/manufacture and is manufactured in the U.S. Manufacturer attests that the U.S. content of subcomponents, by cost is as indicated below.

COMPONENT NAME	MANUFACTURER NAME		% U.S. CONTENT	%FOREIGN CONTENT
FORT BEND COUNTY BID 32 PAX F650	Glaval Bus		71.71%	28.29%
SUBCOMPONENT NAME	**MANUFACTURER NAME**	**MFG LOCATION**	**% OF TOTAL**	
Chassis	Ford Motor Co.	U.S.	47.92%	
Rear Bumper	Romeo	U.S.	0.30%	
Exterior Mirrors	ROSCO	U.S.	0.26%	
Electrical System	LGS	U.S.	0.22%	
A/C System	TransAir	U.S.	5.01%	
Floor Heater	ProAir	U.S.	0.19%	
Wheelchair/Rear Door(s)	Challenger Door	U.S.	1.23%	
Wheelchair Lift	Braun	U.S.	2.54%	
Wheelchair Restraints	Q'Straint	U.S.	0.53%	
Seating	Freedman	U.S.	7.83%	
Windows	Starquest	U.S.	0.43%	
Battery Tray	MorRyde	U.S.	0.04%	
Destination Sign	Luminator	U.S.	3.53%	
Bike Rack	Sportworks	U.S.	0.99%	
Farebox	Diamond	U.S.	0.69%	

MAJOR ACTIVITIES UNDERTAKEN AT THE FINAL ASSEMBLY LOCATION

All purchasing of raw and assembled materials including the chassis, fabrication and welding of the frame, prime paint, installation of all wood, fabric, FRP, aluminum and/or other body panel and/or trim materials, installation of doors and windows, HVAC components and systems, electrical systems, installation of any required options such as wheel chair lifts, tie down kits, seats, radios and optional electronic items, if any, complete undercoat, exterior paint and/or graphics if ordered, full road test, rain booth test and all other final quality functions as needed to ensure compliance with the contract.

FINAL ASSEMBLY LOCATION: 2367 CENTURY DRIVE, GOSHEN, IN 46528

BODY V.I.N. OF UNITS DELIVERED UNDER POST DELIVERY BUY AMERICA:

TBD

FINAL ASSEMBLY % OF TOTAL COST NOT INCLUDED IN THE MATERIAL COSTS ABOVE: **2.38%**

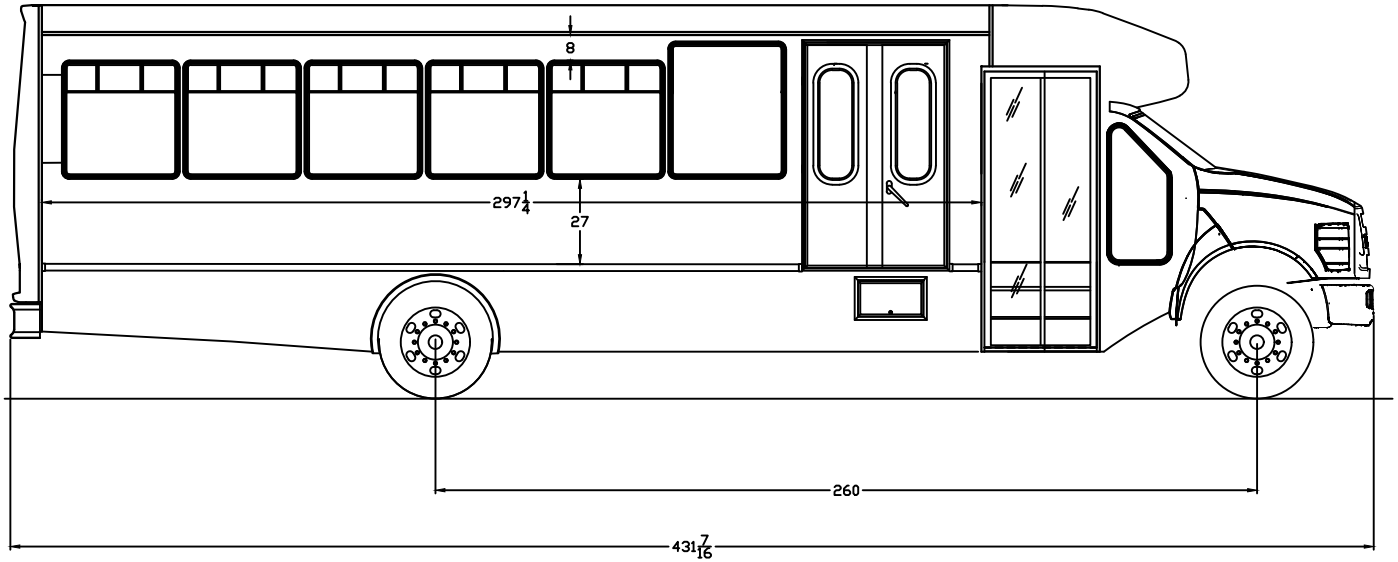
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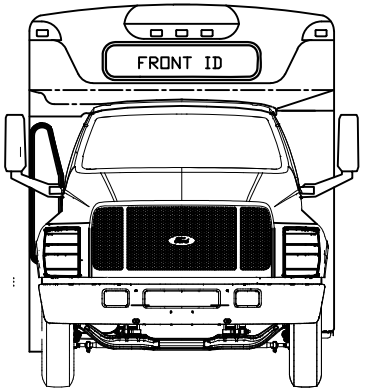
Michael F. Anglemyer
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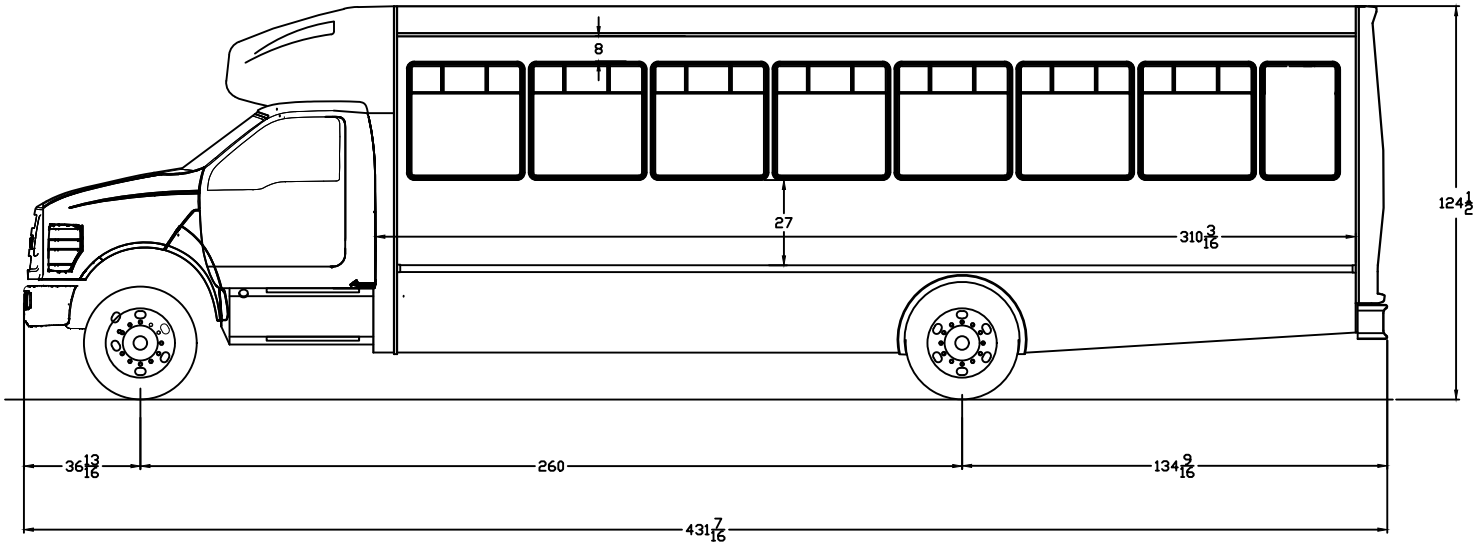
Government Bids
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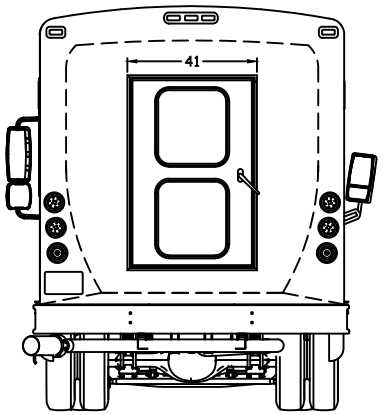
3/14/2022
DATE

Mike Anglemyer
PRINT NAME









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REV. LET.	DESCRIPTION OF CHANGE	BY	CHK	DATE	ECN No.

TOLERANCE UNLESS OTHERWISE SPECIFIED

WOOD	OTHER
± 1/8"	± 1/16"
± 1°	± 1/2°

GLAVAL BUS
Buses for the new millenium

DATE: 03/14/22
NAME: MK
DWG. No.

TITLE: CONCORDE
36' Ford F-650 ELEVATIONS FRONT LIFT

ALLSTAR XL 36' GLAVAL

eSourceBook
Your source for Ford product info

2022 Transit

Specs

Key product specifications include vehicle dimensions and capacities, detailed powertrain information, transmission gear ratios and more.

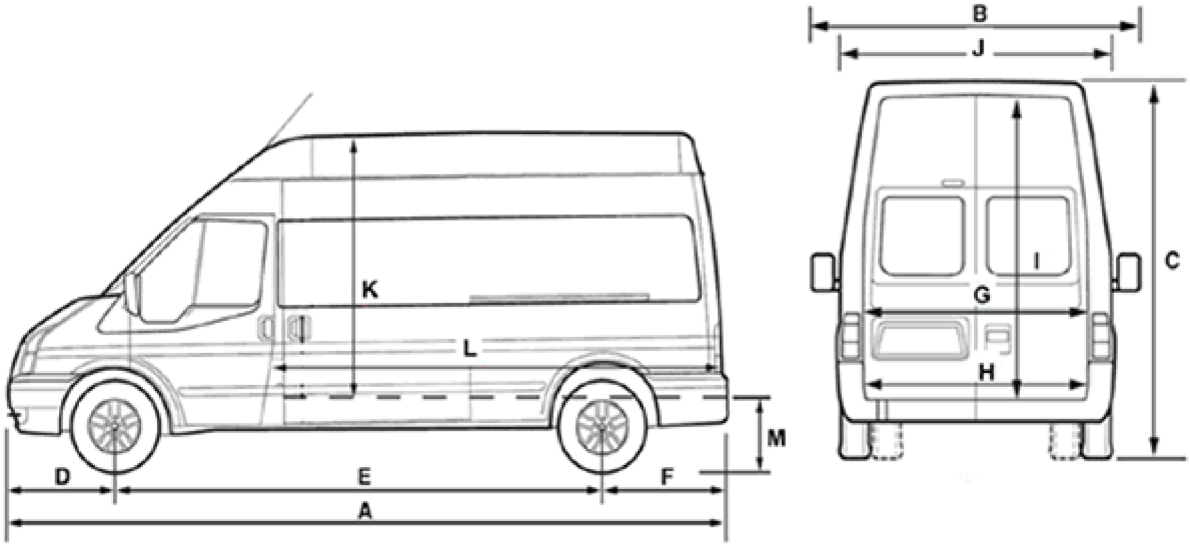
2022 Transit > Specs

Dimensions/Weights/Capabilities

Accessory Reserve Capacity (ARC) Calculation
Base Curb Weight
Cargo Van LWB, High Roof Weight Ratings
Cargo Van LWB, Low Roof Weight Ratings
Cargo Van LWB, Medium Roof Weight Ratings
Cargo Van LWB-EL, High Roof Weight Ratings
Cargo Van RWB, Low Roof Weight Ratings
Cargo Van RWB, Medium Roof Weight Ratings
Cargo Van/Crew Van/Passenger Van Cargo Dimensions
Cargo Van/Crew Van/Passenger Van Seating Dimensions
Cargo/Passenger/Fuel Capacity
Cargo/Crew Van Dimensions
Chassis Cab Dimensions — Low Roof
Chassis Cab, Low Roof Weight Ratings
Crew Van LWB, High Roof Weight Ratings
Crew Van LWB, Low Roof Weight Ratings
Crew Van LWB, Medium Roof Weight Ratings
Crew Van LWB-EL, High Roof Weight Ratings
Crew Van RWB, Low Roof Weight Ratings
Crew Van RWB, Medium Roof Weight Ratings
Cutaway Dimensions — Low Roof
Cutaway Low Roof Weight Ratings
Cutaway/Chassis Cab SRW and DRW Seating Dimensions
Gross Axle Weight
Gross Axle Weight Rating (GAWR)
Gross Combination Weight (GCW)
Gross Combination Weight Rating (GCWR)
Gross Vehicle Weight (GVW)
Gross Vehicle Weight Rating (GVWR)
Maximum Payload Weight Rating
Maximum Payload Weight Ratings
Option Weights
Passenger Van Dimensions
Passenger Van LWB, High Roof Weight Ratings
Passenger Van LWB, Low Roof Weight Ratings
Passenger Van LWB, Medium Roof Weight Ratings
Passenger Van LWB-EL, High Roof Weight Ratings
Passenger Van RWB, Low Roof Weight Ratings
Passenger Van RWB, Medium Roof Weight Ratings
Passenger Weight
Payload
Tongue Weight
Trailer Weight
Truck “Nominal Tonnage”
Vehicle Class Ratings by GVWR
Weight Distribution

2022 Transit > Specs > Dimensions/Weights/Capabilities

Cargo/Crew Van Dimensions



Inches (unless otherwise noted)

	Configuration	Low Roof RWB	Med. Roof RWB	Low Roof LWB	Med. Roof LWB	High Roof LWB	High Roof LWB-EL (SRW/DRW)
	Description						
A	Length	219.9	217.8	237.6	235.5	235.5	263.9
B	Width with Mirrors	97.4	97.4	97.4	97.4	97.4	97.4
	Width without Mirrors	81.3	81.3	81.3	81.3	81.3	81.3
	Width without Mirrors and Door Handles (SRW)	79.6	79.6	79.6	79.6	79.6	79.6/—
C	Height (Cargo Van/Crew Van)	82.2	99.1	82.9/82.6	101.3/100.3	109.6/109.2	110.4/110.2
	Front Track	68.2	68.2	68.2	68.2	68.2	68.2
	Rear Track	68.6	68.6	68.6	68.6	68.6	68.6
D	Front Overhang	40.3	40.3	40.3	40.3	40.3	40.3
E	Wheelbase	129.9	129.9	147.6	147.6	147.6	147.6
F	Rear Overhang	49.7	47.6	49.7	47.6	47.6	76.0
G	Rear Cargo Door Opening Width	61.7	61.7	61.7	61.7	61.7	61.7
H	Cargo Width Between Wheelhouse	54.8	54.8	54.8	54.8	54.8	54.8/45.4
I	Rear Cargo Door Opening Height	49.5	64.9	49.5	64.9	74.3	74.3
J	Max. Cargo Load Width (excluding wheelhouse)	70.2	70.2	70.2	70.2	70.2	70.2
K	Max. Cargo Height (Cargo Van/Crew Van)	56.9	72.0	56.9	72.0	81.5	81.5
L	Max. Cargo Length at Floor (Cargo Van/Crew Van)	126.0/90.2	126.0/90.2	143.7/108.0	143.7/108.0	143.7/108.0	172.2/136.4
	Max. Cargo Length at Belt (Cargo Van/Crew Van)	115.9/78.9	115.9/78.9	133.6/96.6	133.6/96.6	133.6/96.6	162.0/125.1
M	Load Height (curb)	28.9	28.9	28.7	28.7	28.7	28.0

RWB = Regular wheelbase

LWB = Long wheelbase

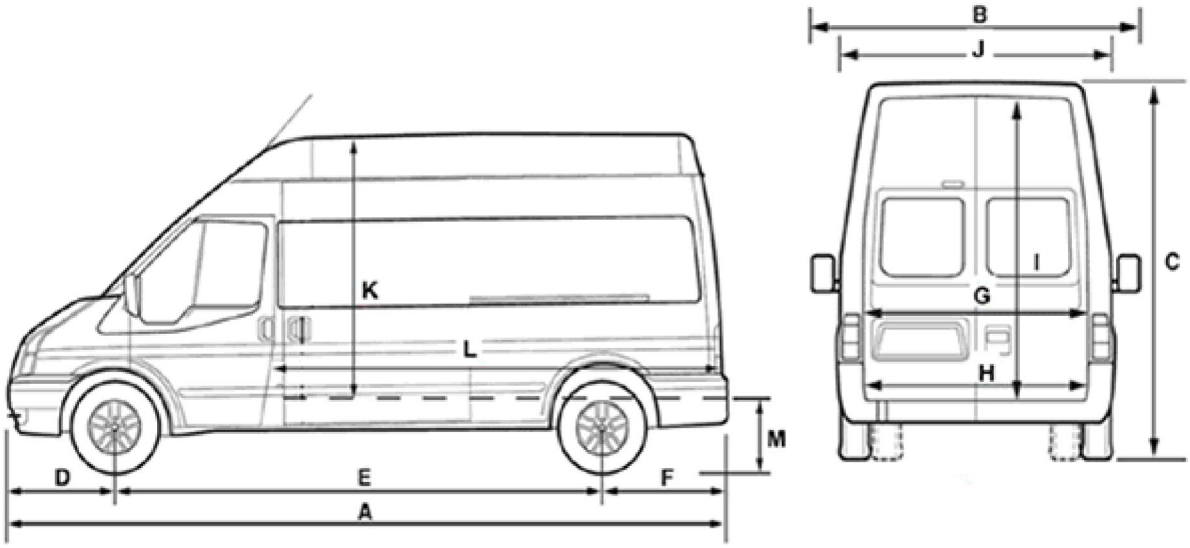
EL = Extended length

SRW = Single rear wheel

DRW = Dual rear wheel

2022 Transit > Specs > Dimensions/Weights/Capabilities

Passenger Van Dimensions



Inches (unless otherwise noted)

	Configuration	Low Roof RWB	Med. Roof RWB	Low Roof LWB	Med. Roof LWB	High Roof LWB	High Roof LWB-EL (SRW/DRW)
	Description						
A	Length	219.9	217.8	237.6	235.5	235.5	263.9
B	Width with Mirrors	97.4	97.4	97.4	97.4	97.4	97.4
	Width without Mirrors	81.3	81.3	81.3	81.3	81.3	81.3
	Width without Mirrors and Door Handles (SRW/DRW)	79.6	79.6	79.6	79.6	79.6	79.6
C	Height	82.2	98.7	82.4	99.2	108.6	107.7
	Front Track	68.2	68.2	68.2	68.2	68.2	68.2
	Rear Track	68.6	68.6	68.6	68.6	68.6	68.6
D	Front Overhang	40.3	40.3	40.3	40.3	40.3	40.3
E	Wheelbase	129.9	129.9	147.6	147.6	147.6	147.6
F	Rear Overhang	49.7	47.6	49.7	47.6	47.6	76.0
G	Rear Cargo Door Opening Width	59.8	59.8	59.8	59.8	59.8	59.8
H	Cargo Width Between Wheelhouse	53.7	53.7	53.7	53.7	53.7	53.7/44.8
I	Rear Cargo Door Opening Height	46.9	62.8	46.9	62.8	72.2	72.2
J	Max. Cargo Load Width (excluding wheelhouses)	69.8	66.9	69.8	69.8	69.8	69.8
K	Max. Cargo Height	52.8	67.6	52.8	67.6	77.0	77.0
L	Max. Cargo Length at Floor	124.0	124.0	141.7	141.7	141.7	170.2
	Max. Cargo Length at Belt	115.1	115.1	132.8	132.8	132.8	161.3
M	Load Height (curb)	28.2	28.2	28.8	28.8	28.8	27.8
	Minimum Running Ground Clearance	6.1	6.1	6.0	6.0	6.0	6.0

RWB = Regular wheelbase

LWB = Long wheelbase

EL = Extended length

SRW = Single rear wheel

DRW = Dual rear wheel

2022 Transit > Specs > Dimensions/Weights/Capabilities

Cutaway Dimensions — Low Roof

Inches (unless otherwise noted)					
Configuration	RWB SRW	RWB DRW	LWB SRW	LWB DRW	LWB-EL DRW
Description					
Wheelbase	138	138	155.7	155.7	178
Length	223.3	223.3	241.1	241.1	263.4
Height	87.3	86.8	87.0	86.5	86.5
Width	80.8	83.1	80.8	83.1	83.1
Width without Mirrors and Door Handles (SRW)	79.6	—	79.6	—	—
Front Track	68.2	68.5	68.2	68.5	68.5
Rear Track	68.6	65.7	68.6	65.7	65.7
Front Overhang	40.3	40.3	40.3	40.3	40.3
Rear Overhang (Rear Axle to End of Frame)	45.1	45.1	45.1	45.1	45.1
Load Height (Loaded)	25.0	24.7/24.5	25.9/ 25.5	25.7/25.4	25.0/24.6
Cab Length	95.7	95.7	95.7	95.7	95.7
Cab Rear to Rear Axle	82.6	82.6	100.3	100.3	122.6
Top of Frame to Top of Cab	61.2	61.2	61.2	61.2	61.2

RWB = Regular wheelbase

LWB = Long wheelbase

EL = Extended length

SRW = Single rear wheel

DRW = Dual rear wheel

2022 Transit > Specs > Dimensions/Weights/Capabilities

Chassis Cab Dimensions — Low Roof

Inches (unless otherwise noted)					
Configuration	RWB SRW	RWB DRW	LWB SRW	LWB DRW	LWB-EL DRW
Description					
Wheelbase	138	138	155.7	155.7	178
Length	223.3	223.3	241.1	241.1	263.4
Height	87.2	86.7	86.9	86.4	86.4
Width	80.8	83.1	80.8	83.1	83.1
Width without Mirrors and Door Handles (SRW)	79.6	—	79.6	—	—
Front Track	68.2	68.5	68.2	68.5	68.5
Rear Track	68.6	65.7	68.6	65.7	65.7
Front Overhang	40.3	40.3	40.3	40.3	40.3
Rear Overhang (Rear Axle to End of Frame)	45.1	45.1	45.1	45.1	45.1

Load Height (Loaded)	24.8	24.7/24.3	25.6/25.3	25.6/25.2	24.9/24.4
Cab Length	95.7	95.7	95.7	95.7	95.7
Cab Rear to Rear Axle	82.6	82.6	100.3	100.3	122.6
Top of Frame to Top of Cab	61.2	61.2	61.2	61.2	61.2

RWB = Regular wheelbase

LWB = Long wheelbase

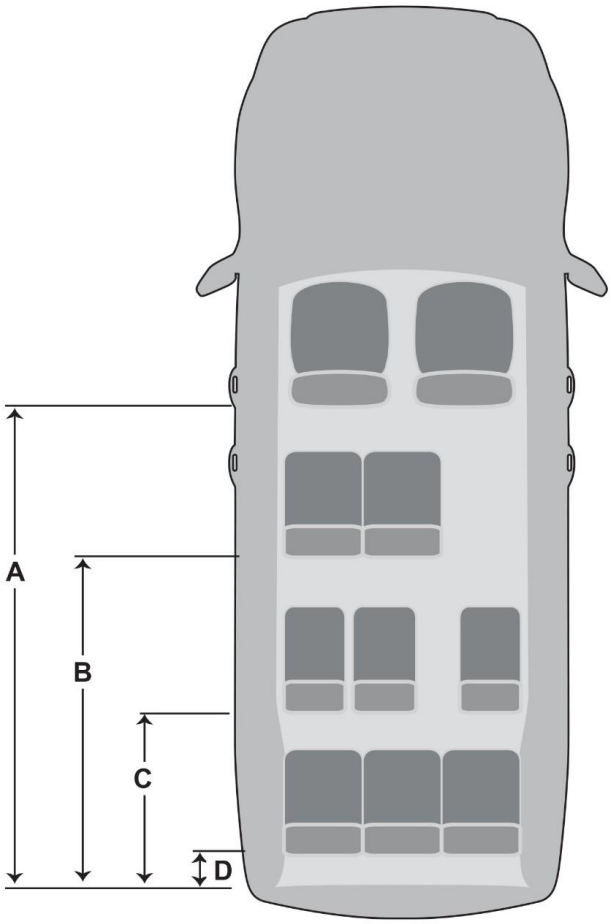
EL = Extended length

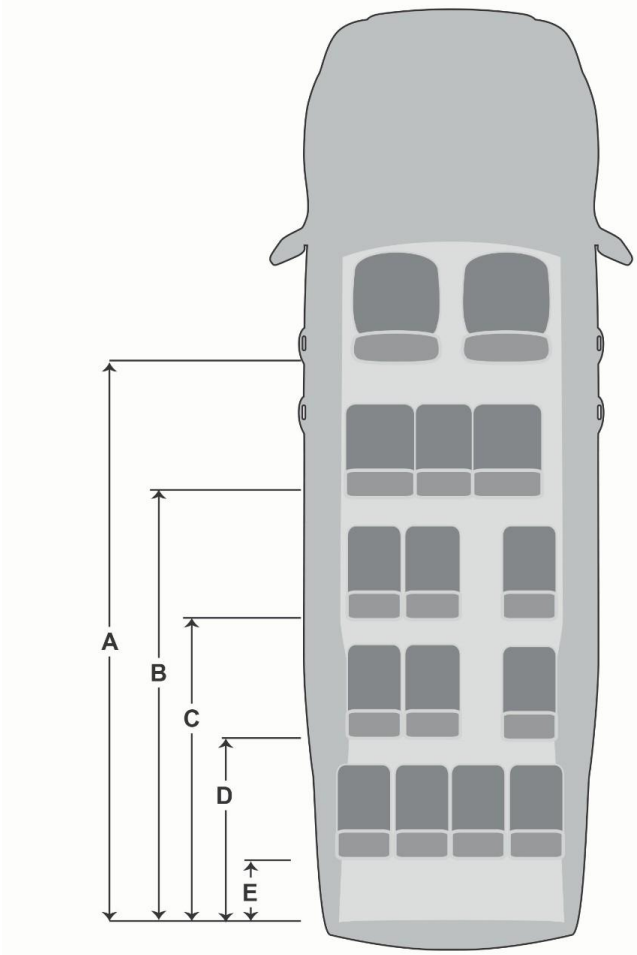
SRW = Single rear wheel

DRW = Dual rear wheel

2022 Transit > Specs > Dimensions/Weights/Capabilities

Cargo Van/Crew Van/Passenger Van Cargo Dimensions





Configuration			Low Roof RWB	Med. Roof RWB	Low Roof LWB	Med. Roof LWB
Wheelbase (in.)			130	130	148	148
Description (in.)			Cargo Van/Crew Van/Passenger Van			
A	Cargo Length Behind 1st Row	@ floor @ beltline	126.0/126.0/124.0 115.9/115.9/115.1	126.0/126.0/124.0 115.9/115.9/115.1	143.7/143.7/141.7 133.6/133.6/132.8	143.7/143.7/141.7 133.6/133.6/132.8
B	Cargo Length Behind 2nd Row	@ floor @ beltline	—/90.2/89.4 —/78.9/78.1	—/90.2/89.4 —/78.9/78.1	—/108/107.1 —/96.6/95.9	—/108/107.1 —/96.6/95.9
C	Cargo Length Behind 3rd Row	@ floor @ beltline	—/—/58.5 —/—/47.3	—/—/58.5 —/—/47.3	—/—/76.2 —/—/65.0	—/—/76.2 —/—/65.0

D	Cargo Length Behind 4th Row	@ floor @ beltline	—/—/27.6(1) —/—/16.4(1)	—/—/27.6(1) —/—/16.4(1)	—/—/45.4(2) —/—/34.1(2)	—/—/45.4(2) —/—/34.1(2)
E	Cargo Length Behind 5th Row	@ floor @ beltline	—/—/— —/—/—	—/—/— —/—/—	—/—/14.5(3) —/—/3.3(3)	—/—/14.5(3) —/—/3.3(3)
	Cargo Width — Between Wheelhouses		54.8/54.8/53.7	54.8/54.8/53.7	54.8/54.8/53.7	54.8/54.8/53.7
	Cargo Width — Excluding Wheelhouses		70.2/70.2/69.8	70.2/70.2/69.8	70.2/70.2/69.8	70.2/70.2/69.8
	Cargo Height Maximum		56.9/56.9/52.8	72.0/72.0/67.6	56.9/56.9/52.8	72.0/72.0/67.6

Configuration			High Roof LWB	High Roof LWB-EL (SRW)	High Roof LWB-EL (DRW)
Wheelbase (in.)			148	148 EL	148 EL
Description (in.)			Cargo Van/Crew Van/Passenger Van		
A	Cargo Length Behind 1st Row	@ floor @ beltline	143.7/143.2/141.7 133.6/133.6/132.8	172.2/172.2/— 162.0/162.0/—	172.2/172.2/170.2 162.0/162.0/161.3
B	Cargo Length Behind 2nd Row	@ floor @ beltline	—/108.0/107.1 —/96.6/95.9	—/136.4/— —/125.1/—	—/136.4/135.6 —/125.1/124.3
C	Cargo Length Behind 3rd Row	@ floor @ beltline	—/—/76.2 —/—/65.0	—/—/— —/—/—	—/—/104.7 —/—/93.5
D	Cargo Length Behind 4th Row	@ floor @ beltline	—/45.4(1) —/—/34.1(1)	—/—/— —/—/—	—/—/73.8(1) —/—/62.6(1)
E	Cargo Length Behind 5th Row	@ floor @ beltline	—/—/14.5(3) —/—/3.3(3)	—/—/— —/—/—	—/—/43.0(3) —/—/31.7(3)
	Cargo Width — Between Wheelhouses		54.8/54.8/53.7	54.8/54.8/53.7	45.4/45.4/53.7
	Cargo Width — Excluding Wheelhouses		70.2/70.2/69.8	70.2/70.2/69.8	70.2/70.2/69.8
	Cargo Height Maximum		81.5/81.5/77.0	81.5/81.5/77.0	81.5/81.5/77.0

(1) 10-passenger passenger van.

(2) 12-passenger passenger van.

(3) 14- or 15-passenger passenger van.

RWB = Regular wheelbase

LWB = Long wheelbase

EL = Extended length

SRW = Single rear wheel

DRW = Dual rear wheel

2022 Transit > Specs > Dimensions/Weights/Capabilities

Cargo Van/Crew Van/Passenger Van Seating Dimensions

Configuration	Low Roof RWB	Med. Roof RWB	Low Roof LWB	Med. Roof LWB	High Roof LWB	High Roof LWB-EL (SRW)	High Roof LWB-EL (DRW)
Description (in.)							
Head Room							
1st Row	40.8	52.0	40.8	52.0	56.6	56.6	56.6
2nd Row(1)	41.1	55.8(4)	41.1	55.8	65.2	—	65.2
3rd Row(1)	40.6(2)	55.8(2)	40.6	55.8(2)	65.2(2)	—	65.2
4th Row(1)	38.7(3)	55.8(3)	38.7(5)	55.8(5)	65.2(5)	—	65.2(3)
5th Row(1)	—	—	38.1(6)	52.6(6)	61.3(6)	—	61.3(6)

Shoulder Room							
1st Row	67.9	67.9	67.9	67.9	67.9	67.9	67.9
2nd Row[1]	71.4	71.4[4]	71.4	71.4	71.4	—	71.4
3rd Row[1]	67.0[2]	67.0[2]	67.0	67.0[2]	67.0[2]	—	67.0
4th Row[1]	67.8[3]	67.8[3]	67.8[5]	67.8[5]	67.8[5]	—	67.8[3]
5th Row[1]	—	—	67.8[6]	67.8[6]	67.8[6]	—	67.8[6]
Hip Room							
1st Row	60.7	60.7	60.7	60.7	60.7	60.7	60.7
2nd Row[1]	69.6	69.6[4]	69.6	69.6	69.6	—	69.6
3rd Row[1]	67.3[2]	67.3[2]	67.3	67.3[2]	67.3[2]	—	67.3
4th Row[1]	67.8[3]	68.0[3]	68.0[5]	68.0[5]	68.0[5]	—	68.0[3]
5th Row[1]	—	—	68.0[6]	68.0[6]	68.0[6]	—	68.0[6]
Leg Room							
1st Row (max.)	41.3	41.3	41.3	41.3	41.3	41.3	41.3
2nd Row[1]	33.7	33.7[4]	33.7	33.7	33.7	—	33.7
3rd Row[1]	35.6[2]	35.6[2]	35.6	35.6[2]	35.6[2]	—	35.6
4th Row[1]	35.6[3]	35.6[3]	35.6[5]	35.6[5]	35.6[5]	—	35.6[3]
5th Row[1]	—	—	35.6[6]	35.6[6]	35.6[6]	—	35.6[6]

(1) Passenger van only.

(2) 8-passenger Passenger Van.

(3) 10-passenger passenger van.

(4) 5-passenger Passenger Van.

(5) 12-passenger Passenger Van.

(6) 14- or 15-passenger Passenger Van.

RWB = Regular wheelbase

LWB = Long wheelbase

EL = Extended length

SRW = Single rear wheel

DRW = Dual rear wheel

2022 Transit > Specs > Dimensions/Weights/Capabilities

Cutaway/Chassis Cab SRW and DRW Seating Dimensions

Configuration	All
Description (in.)	
Head Room — 1st Row	44.9
Max. Leg Room — 1st Row	41.3
Hip Room — 1st Row	60.7
Shoulder Room — 1st Row	67.9

2022 Transit > Specs > Dimensions/Weights/Capabilities

Cargo/Passenger/Fuel Capacity

Cargo Van Configuration	Low Roof RWB	Medium Roof RWB	Low Roof LWB	Medium Roof LWB	High Roof LWB	High Roof LWB-EL
Passengers	2	2	2	2	2	2
Rows of Seats	1	1	1	1	1	1
Cargo Volume[1]						
Behind 1st Row (cu. ft.)	246.7	315.2	277.7	357.1	404.3	487.3[2]
Max. with Front-Passenger Seat Removed[3] (cu. ft.)	280.9	358.7	311.9	400.5	453.4	536.4

Crew Van Configuration	Low Roof RWB	Medium Roof RWB	Low Roof LWB	Medium Roof LWB	High Roof LWB	High Roof LWB EL
Passengers	5	5	5	5	5	5
Rows of Seats	2	2	2	2	2	2
Cargo Volume[1]						
Behind 1st Row (cu. ft.)	246.7	315.2	277.7	357.1	404.3	487.3[2]
Behind 2nd Row (cu. ft.)	158.4	220.4	204.7	263.4	300.2	383.8

Passenger Van Configuration	Low Roof RWB[4]		Low Roof LWB			Medium Roof RWB[4]			Medium Roof LWB			
Passengers	8	10	12	14	15	5	8	10	8	12	14	15
Rows of Seats	3	4	4	5	5	2	3	4	3	4	5	5
Cargo Volume[1]												
Behind 1st Row (cu. ft.)	224.5	224.5	256.4	256.4	223.5	292.7	292.7	292.7	336.1	336.1	303.1	303.1
Behind 2nd Row (cu. ft.)	151.8	151.8	183.0	150.0	150.0	197.9	197.9	197.9	239.8	239.8	206.8	206.8
Behind 3rd Row (cu. ft.)	94.2	94.2	124.5	91.5	91.5	—	125.0	125.0	166.9	166.9	133.9	133.9
Behind 4th Row (cu. ft.)	—	39.1	70.1	48.9	48.9	—	—	51.8	—	93.9	72.8	72.8

Passenger Van Configuration	High Roof LWB				High Roof LWB-EL		
Passengers	8	12	14	15	10	14	15
Rows of Seats	3	4	5	5	4	5	5
Cargo Volume[1]							
Behind 1st Row (cu. ft.)	382.6	382.6	349.6	349.6	425.4	425.4	425.4
Behind 2nd Row (cu. ft.)	273.0	273.0	240.1	240.1	313.1	313.1	313.1
Behind 3rd Row (cu. ft.)	190.0	190.0	157.0	157.0	230.0	230.0	230.0
Behind 4th Row (cu. ft.)	—	107.0	85.8	85.8	184.0	184.0	184.0
Behind 5th Row (cu. ft.)	—	—	—	—	—	100.5	100.5

(1) Cargo and load capacity limited by weight and weight distribution.

(2) SRW models. Less incremental wheel well width for DRW.

(3) Applicable only when vehicle is ordered without front-passenger seat.

(4) Restricted to government orders only.

RWB = Regular wheelbase

LWB = Long wheelbase

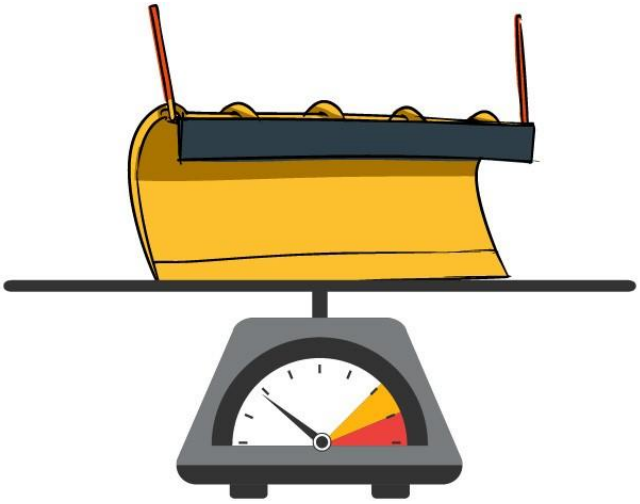
EL = Extended length

Accessory Reserve Capacity (ARC) Calculation

This section provides the information needed to calculate the effect that vehicle options have on the payload capacity of Ford commercial vehicles.

This information is useful to customers who plan to add aftermarket accessories or haul cargo at or near the vehicle's maximum capacity.

This section includes charts for each series, listing the maximum allowable weights for each GVWR.



ACCESSORY RESERVE CAPACITY

You can help prospective buyers estimate the total weight of accessories, equipment and modifications that may be added to the completed vehicle.

Ford vehicles are certified for compliance with the following FMVSS (Federal Motor Vehicle Safety Standards) or CMVSS (Canadian Motor Vehicle Safety Standards):(1)

- 204 — Steering Column Rearward Displacement
- 208 — Occupant Crash Protection
- 212 — Windshield Mounting
- 219 — Windshield Zone Intrusion
- 301 — Fuel System Integrity
- 303 — CNG Fuel System Integrity (Canadian Standard 301.2)

The total added accessory weight must not exceed the allowable weight shown in the tables. You should make retail customers who intend to modify or install accessories or equipment aware of this fact.

If the modification or installation of accessories or equipment causes the unloaded weight of the vehicle, as revised with the added equipment, to exceed the test vehicle weight, the U.S. vehicle alterer(2) may be responsible to certify the altered vehicle according to Title 49, Code of Federal Regulations 567.7 and 568.8. A Canadian vehicle alterer may be responsible to certify the altered vehicle according to Section 6 of the Canadian Motor Vehicle Safety Regulations.

In this section, each vehicle has a worksheet that addresses Total Accessory Reserve Capacity only. It does not consider Front Axle Accessory Reserve Capacity and does not include DSO option weights in the calculations.

To approximate the amount of accessory equipment or modification weight that can be added to a Ford light truck without exceeding the test vehicle weight, calculate an estimated Total Accessory Reserve Capacity as follows:

1. Determine the "Total Actual Regular Production Option Content Weight" of the desired regular production options from the corresponding Accessory Reserve Capacity Calculation/Worksheet on the following page.
2. Subtract the "Total Actual Regular Production Option Content Weight" from the "Maximum Allowable Weight (Regular Production Options & Aftermarket Equipment)" for the appropriate model. The difference is the estimated "Total Accessory Reserve Capacity."

	Maximum Allowable Weight (Regular Production Options & Aftermarket Equipment)
–	Total Actual Regular Production Option Content Weight
=	Total Accessory Reserve Capacity

Warning: The Accessory Reserve Capacity weight information addresses FMVSS and CMVSS Nos. 204, 208, 212, 219, 301 and 303 compliance only. For all light-duty trucks with a GVW rating under 8,500 lbs., federally certified trucks with a GVW rating of 8,500 to 10,000 lbs. that are optionally emissions certified to light-duty standards and all California complete vehicles with a GVW rating of 14,000 lbs. or less, if more than 500 lbs. is added to the vehicle's "maximum vehicle weight,"(3) the modifier may be responsible for recertification to the applicable EPA or CARB emissions standards.

(1) Ford Motor Company's certification of compliance with FMVSS/CMVSS is based on specific vehicle test weights. These standards are applicable to completed vehicles of 10,000-lb. GVWR or less. Maximum allowable weights shown in the tables for vehicles above 10,000-lb. GVWR are maximum recommended values for optimum performance, durability and customer satisfaction.

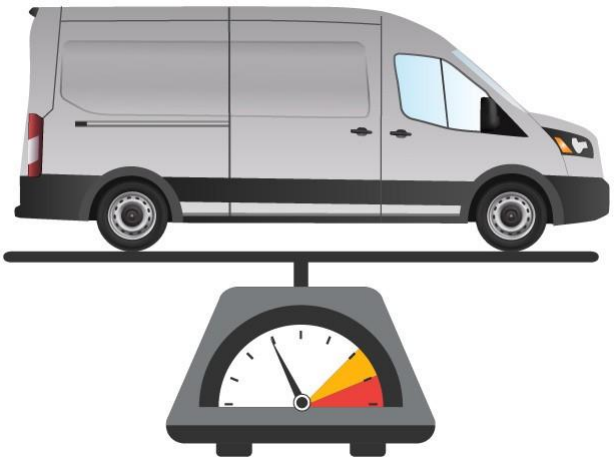
(2) The same procedure to estimate the "Total Accessory Reserve Capacity" is recommended to completed vehicle alterers in Canada.

(3) **Important:** "Maximum vehicle weight" is calculated in accordance with the definition provided in an EPA guidance letter dated July 13, 1979, from C.N. Freed of the EPA to M.H. McBride, legal counsel of the Recreation Vehicle Industry Association. The preceding conditions are based on that letter and on EPA Advisory Circular No. 64 — a March 7, 1977, publication that provides guidance on the need for separate certification of vehicles modified after original manufacture, but prior to sale and delivery to the ultimate purchaser. Additional guidance or questions concerning EPA's policies with respect to alterers of completed vehicles should be directed to legal counsel or the Environmental Protection Agency.

2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > General Truck Payload Information

Base Curb Weight

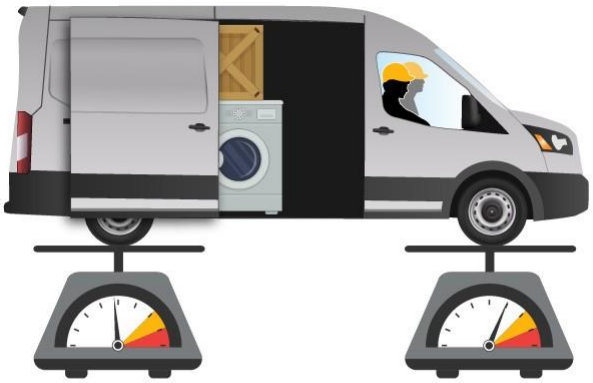
- The weight of the vehicle including standard equipment, oil, lubricants and a full tank of fuel. It does not include the weight of driver, passengers, cargo or any optional or aftermarket equipment
- **Base curb weights for each engine/standard equipment transmission combination are listed in the Weight Ratings pages of each vehicle section (see Maximum Payload Weight Ratings for reference)**
- Actual Regular Production Option Content Weights can be found in the charts under Actual Regular Production Option Content Weights



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Gross Axle Weight

The total weight placed on each axle of the vehicle (front and rear).



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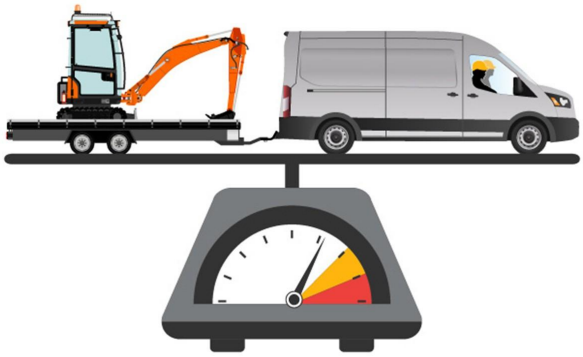
Gross Axle Weight Rating (GAWR)

The maximum allowable weight to be placed on an individual axle (front or rear). Gross Axle Weight Ratings are provided for both front and rear axles.

2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > General Truck Payload Information

Gross Combination Weight (GCW)

Gross vehicle weight plus the trailer weight.

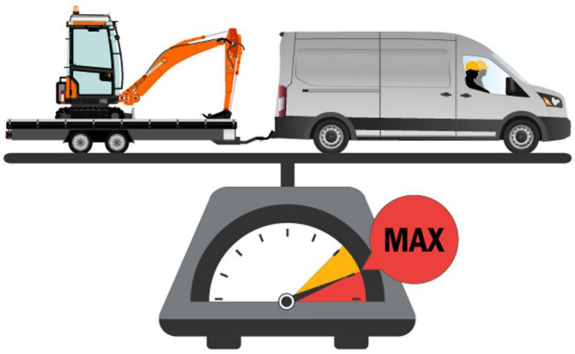


2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > General Truck Payload Information

Gross Combination Weight Rating (GCWR)

The maximum allowable weight of the towing vehicle, the trailer and all associated passengers, cargo and equipment.

The point to remember is that the actual weights should never exceed the listed weight ratings. And remind your customers that if they do exceed the recommended weight ratings, they could disqualify their warranty coverage.



2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > General Truck Payload Information

Gross Vehicle Weight (GVW)

The weight of the vehicle including driver, passengers, optional and aftermarket equipment, and all cargo.



2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > General Truck Payload Information

Gross Vehicle Weight Rating (GVWR)

The maximum allowable weight of the fully loaded vehicle (including passengers and cargo).



2022 Transit > Specs > Dimensions/Weights/Capabilities > General Truck Payload Information

Maximum Payload Weight Rating

This is the advertised payload rating. It is the maximum allowable payload for the truck, including driver, passengers, optional and aftermarket equipment, and cargo. The weight of the engine and its standard transmission is already factored into the Maximum Payload Weight Rating. If the engine is also available with an optional transmission, that engine/transmission weight can be found in the Actual Regular Production Option Content Weight charts.

Vehicle Payload Calculation	Front/Total (lbs.)
Maximum Payload Weight Rating(1)	____ /____
Less Total Actual Regular Production Option Content Weight (from Line A, Payload/GVWR Worksheet)	____ /____
Equals Net Total Vehicle Payload (Front and rear axles and spring capacities will be sufficient to carry this payload uniformly distributed in vehicle cargo area)	____ /____

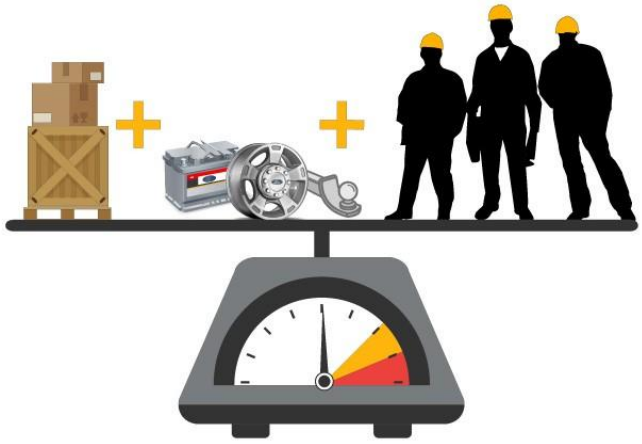
(1) Weight for driver and passengers must be deducted. Refer to the individual vehicle weight rating pages for maximum payload weight ratings. Refer to Regular Production Option Content Weight.

NOTE: Front springs are computer selected to meet specific option requirements for each vehicle; HD front springs are standard if vehicle option weights require.

2022 Transit > Specs > Dimensions/Weights/Capabilities > General Truck Payload Information

Maximum Payload Weight Ratings

The Payload Weight Ratings and the Max. Option Weight/Max. Total Accessory Reserve Capacity (ARC) Weight Charts(1) are published and can be found in the weight ratings pages of the individual vehicle sections. This information is grouped together with other model, engine/transmission and maximum gross vehicle weight rating (GVWR) data for ease of use.

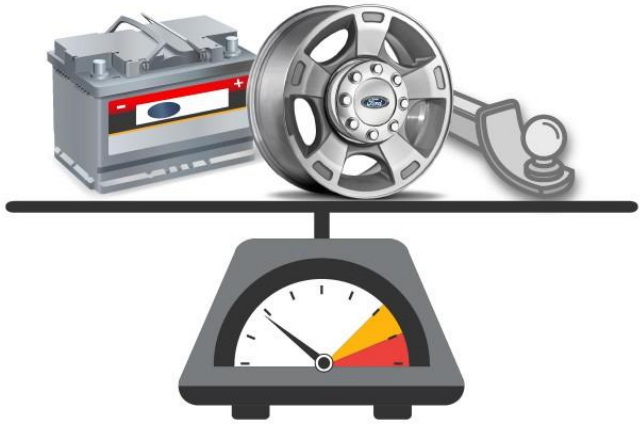


(1) OPT/ARC Weight is the maximum allowable weight for regular production options (OPT) and aftermarket equipment. Accessory Reserve Capacity (ARC) for models with standard equipment and the engine/transmission combination indicated.

2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > General Truck Payload Information

Option Weights

The weight of any added equipment that is not included in the base curb weight.



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Passenger Weight

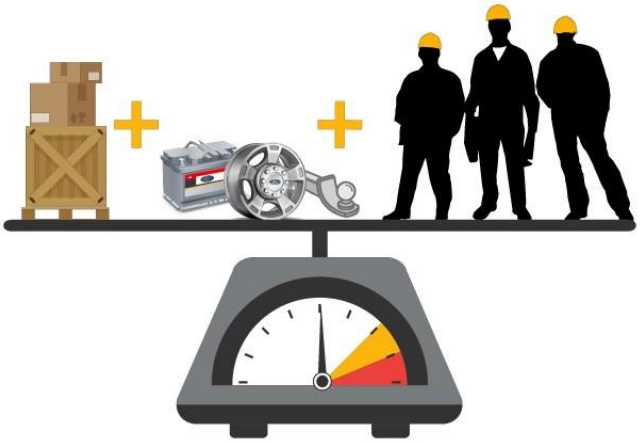
Defined as 150 lbs. multiplied by the number of safety-belted seating positions, including the driver, that the vehicle can carry.



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Payload

- Maximum payload is defined as the weight of all passengers, optional and aftermarket equipment, and cargo
- Net payload is defined as the weight that can be placed in the truck after subtracting for driver, passengers, and optional and aftermarket equipment



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Tongue Weight

The amount of the trailer's weight that bears down on the trailer hitch (10 to 15 percent of the total loaded conventional trailer weight or 15 to 25 percent of the total loaded 5th-wheel trailer weight).



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Trailer Weight

The weight of a fully loaded trailer, including all attachments, lights, etc.



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Truck “Nominal Tonnage”

"Nominal Tonnage" is a term that Ford and other manufacturers have historically used to **generally categorize** the load capacity of a vehicle series; it is not a term defined by federal or state law.

Our COV (Certificate of Origin for a Vehicle) includes each particular vehicle's shipping weight as well as the vehicle's gross vehicle weight rating or GVWR (from which one can determine the particular vehicle's rated carrying capacity, including driver, passengers, fluids, body upfit [if applicable] and aftermarket accessories). The COV also includes the vehicle's "Nominal Tonnage."

"Nominal Tonnage" provides the **general** usable cargo capability that most (but not all) of the vehicles with the designated nominal tonnage can expect to handle. That is, nominal tonnage states the general load capacity for each vehicle series, although particular vehicles may have a higher (or in some circumstances, lower) load capacity based on the specifications of the particular vehicle.

Relevant Vehicle Series/Nominal Tonnage Relationship Categories	
Nominal Tonnage	**Vehicle**
½	Ranger, F-150, Transit Connect, Transit Passenger Van
¾	E-350 Cutaway/Stripped Chassis, Transit-150 Cargo Van/Crew Van/Passenger Van, Transit-250 Cargo Van/Crew Van, Transit-350 Cargo Van/Crew Van/Passenger Van (GVWR 9,499 lbs.), Transit-250 Cutaway/Chassis Cab, F-250 Pickup
1	E-450 Cutaway/Stripped Chassis, Transit-350 Cargo Van/Crew Van/Passenger Van (GVWR 9,500 lbs.), Transit-350 Cutaway/Chassis Cab, F-350 Pickup, F-350 Chassis Cab
1½	F-450 Pickup, F-450 Chassis Cab
2	F-550 Chassis Cab

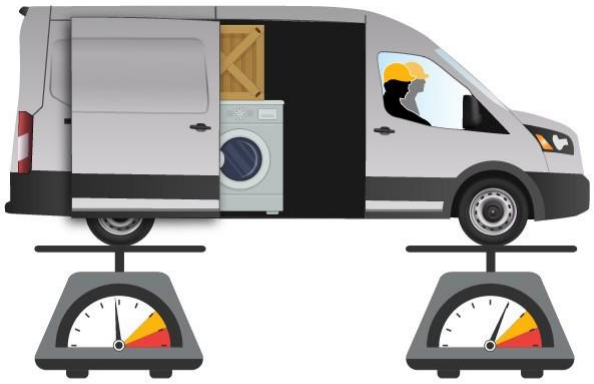
Vehicle Class Ratings by GVWR

Weight Class	GVWR Range (lbs.)	Vehicle/Model
1	Up to 6,000	Transit Connect Cargo Van (5,110–5,302 lbs.) Transit Connect Passenger Wagon (5,302–5,420 lbs.)
2	6,001 to 10,000	Ranger (6,050 lbs.) Transit-150 Cargo Van/Passenger Van (8,670/8,550 lbs.) Transit-250 Cargo Van/Crew Van (9,070 lbs.) Transit-350 Cargo Van/Crew Van (9,250–9,950 lbs.) Transit-350 Passenger Van (9,250–9,550 lbs.) Transit-250 Cutaway/Chassis Cabs (9,070 lbs.) Transit-350 Cutaway/Chassis Cabs (9,500 and 9,950 lbs.) E-Transit T350 Cargo Van, Chassis Cab and Cutaway (9,500 lbs.) F-150 (6,070–7,850 lbs.) F-250 Pickup (9,900–10,000 lbs.) F-350 Pickup (10,000 lbs.) F-350 Chassis Cab SRW (9,800–10,000 lbs.)
3	10,001 to 14,000	E-350 Cutaway (10,050–12,500 lbs.) E-350 Stripped Chassis (11,500–12,500 lbs.) Transit-350 Cargo Van/Crew Van/Passenger Van (10,360 lbs.; 11,000 lbs. [Cargo Van only]) Transit-350 Cutaway/Chassis Cab (10,360 and 11,000 lbs.) F-250 Pickup (10,400–10,800 lbs.) F-350 SRW Pickup (10,100–12,400 lbs.) F-350 DRW Pickup (13,000(1)–14,000 lbs.) F-350 Chassis Cab SRW (10,500–11,500 lbs.) F-350 DRW Chassis Cab (14,000 lbs.) E-450 Cutaway (14,000 lbs.) E-450 Stripped Chassis (14,000 lbs.) F-450 Pickup (14,000 lbs.)
4	14,001 to 16,000	E-450 Cutaway (14,200–14,500 lbs.) E-450 Stripped Chassis (14,200–14,500 lbs.) F-450 Chassis (15,000–16,000 lbs.) F59 Commercial Stripped Chassis (16,000 lbs.) F53 Motorhome Chassis (16,000 lbs.)
5	16,001 to 19,500	F-450 Chassis Cab (16,500 lbs.) F-550 (17,500–19,500 lbs.) F59 Commercial Stripped Chassis (19,500 lbs.) F53 Motorhome Chassis (18,000 lbs.)
6	19,501 to 26,000	F-600 (22,000) F-650 Gasoline (22,000–26,000 lbs.)/Diesel (22,000–26,000 lbs.) F59 Commercial Stripped Chassis (22,000 lbs.) F53 Motorhome Chassis (20,500–26,000 lbs.)
7	26,001 to 33,000	F-650 (27,500–29,000 lbs. Gas and Diesel) F-750 (31,000–33,000 lbs. Gas and Diesel)
8	33,001 plus	F-750 (34,200–37,000 lbs. Diesel)

(1) 13,000 lbs. Pickup Box Delete only.

Weight Distribution

That portion of a vehicle's total weight that will be supported by each axle and each tire. Proper distribution of vehicle weight is critical to braking, handling and to the service life of components such as axles, springs, bearings and tires.



2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Cargo Van RWB, Low Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/129.9	3.5L PFDI (RWD/AWD)	8,670	3,685/3,489	2,576/2,380	4,130/4,630	5,070	2,923/3,117	2,062/2,064	4,985/5,181
T-150/129.9	3.5L EcoBoost (RWD/AWD)	8,670	3,603/3,405	2,495/2,296	4,130/4,630	5,070	2,989/3,184	2,077/2,081	5,066/5,265
T-250/129.9	3.5L PFDI (RWD/AWD)	9,070	4,085/3,889	2,576/2,380	4,130/4,630	5,515	2,923/3,117	2,062/2,064	4,985/5,181
T-250/129.9	3.5L EcoBoost (RWD/AWD)	9,070	4,003/3,805	2,495/2,296	4,130/4,630	5,515	2,989/3,184	2,077/2,081	5,066/5,265
T-350/129.9	3.5L PFDI (RWD/AWD)	9,500	4,515/4,319	2,576/2,380	4,130/4,630	5,750	2,923/3,117	2,062/2,064	4,985/5,181
T-350/129.9	3.5L EcoBoost (RWD/AWD)	9,500	4,433/4,235	2,495/2,296	4,130/4,630	5,750	2,989/3,184	2,077/2,081	5,066/5,265
E-Transit T-/ 129.9	Battery Electric (RWD only)	9,500	3,880	1,942	4,130	6,000	2,891	2,729	5,619

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Cargo Van RWB, Medium Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/129.9	3.5L PFDI (RWD/AWD)	8,670	3,555/3,359	2,446/2,250	4,130/4,630	5,070	2,947/3,141	2,168/2,170	5,115/5,311
T-150/129.9	3.5L EcoBoost	8,670	3,468/3,269	2,360/2,161	4,130/4,630	5,070	3,018/3,213	2,183/2,187	5,201/5,400

	(RWD/AWD)								
T-250/129.9	3.5L PFDI (RWD/AWD)	9,070	3,955/3,759	2,446/2,250	4,130/4,630	5,515	2,947/3,141	2,167/2,170	5,115/5,311
T-250/129.9	3.5L EcoBoost (RWD/AWD)	9,070	3,868/3,670	2,360/2,161	4,130/4,630	5,515	3,018/3,213	2,183/2,187	5,201/5,400
T-350/129.9	3.5L PFDI (RWD/AWD)	9,500	4,385/4,189	2,446/2,250	4,130/4,630	5,750	2,947/3,141	2,167/2,170	5,115/5,311
T-350/129.9	3.5L EcoBoost (RWD/AWD)	9,500	4,298/4,100	2,360/2,132	4,130/4,630	5,750	3,018/3,213	2,183/2,187	5,201/5,400
E-Transit T-/129.9	Battery Electric (RWD only)	9,500	3,750	1,812	4,130	6,000	2,915	2,835	5,745

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Cargo Van LWB, Low Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/147.6	3.5L PFDI (RWD/AWD)	8,670	3,582/3,375	2,474/2,267	4,130/4,630	5,070	3,015/3,211	2,072/2083	5,087/5,294
T-150/147.6	3.5L EcoBoost (RWD/AWD)	8,670	3,499/3,295	2,390/2,186	4,130/4,630	5,070	3,082/3,277	2,089/2,098	5,171/5,375
T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,982/3,775	2,474/2,267	4,130/4,630	5,515	3,015/3,211	2,072/2083	5,087/5,294
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,898/3,684	2,389/2,185	4,130/4,630	5,515	3,081/3,276	2,091/2,100	5,172/5,376
T-350/147.6	3.5L PFDI (RWD/AWD)	9,500	4,412/4,205	2,474/2,267	4,130/4,630	5,750	3,015/3,211	2,072/2083	5,087/5,294
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	4,346/4,133	2,407/2,194	4,630	5,750	3,081/3,277	2,073/2,090	5,154/5,367
E-Transit T-/147.6	Battery Electric (RWD only)	9,500	3,776	1,838	4,130	6,000	3,041	2,682	5,723

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Cargo Van LWB, Medium Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/147.6	3.5L PFDI (RWD/AWD)	8,670	3,434/3,227	2,326/2119	4,130/4,630	5,070	3,051/3,247	2,184/2,295	5,235/5,442

T-150/147.6	3.5L EcoBoost (RWD/AWD)	8,670	3,352/3,148	2,243/2,039	4,130/4,630	5,070	3,116/3,311	2,202/2,211	5,318/5,522
T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,834/3,627	2,326/2119	4,130/4,630	5,515	3,051/3,247	2,184/2,295	5,235/5,442
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,752/3,548	2,243/2,039	4,130/4,630	5,515	3,116/3,311	2,202/2,211	5,318/5,522
T-350/147.6	3.5L PFDI (RWD/AWD)	9,500	4,264/4,057	2,326/2119	4,130/4,630	5,750	3,051/3,247	2,184/2,295	5,235/5,442
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	4,191/3,978	2,252/2,039	4,130/4,630	5,750	3,115/3,311	2,194/2,211	5,309/5,522
E-Transit T-/147.6	Battery Electric (RWD only)	9,500	3,628	1,690	4,130	6,000	3,007	2,794	5,871

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Cargo Van LWB, High Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,739/3,532	2,231/2,024	4,130/4,630	5,515	3,077/3,273	2,253/2,264	5,330/5,537
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,657/3,453	2,148/1,944	4,130/4,630	5,515	3,144/3,339	2,269/2,278	5,413/5,617
T-350/147.6	3.5L PFDI (RWD/AWD)	9,500	4,169/3,962	2,231/2,024	4,130/4,630	5,750	3,077/3,273	2,253/2,264	5,330/5,537
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	4,102/3,889	2,163/1,950	4,630	5,750	3,143/3,339	2,255/2,272	5,398/5,611
E-Transit T-/147.6	Battery Electric (RWD only)	9,500	3,533	1,595	4,130	6,000	3,103	2,863	5,966

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Cargo Van LWB-EL, High Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,536/3,329	2,028/1,821	4,130/4,630	5,660	2,939/3,135	2,594/2,605	5,533/5,740
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,445/3,251	1,946/1,742	4,130/4,630	5,660	3,000/3,195	2,615/2,624	5,615/5,819
T-350/147.6	3.5L PFDI	9,500	3,966/3,759	2,028/1,821	4,130/4,630	6,000	2,939/3,135	2,594/2,605	5,533/5,740

	(RWD/AWD)								
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	3,885/3,681	1,946/1,742	4,130/4,630	6,000	3,158/3,354	3,005/3,022	6,163/6,376
E-Transit T-/147.6	Battery Electric (RWD only)	9,500	3,330	1,392	4,130	6,000	2,886	3,283	6,169
T-350 DRW/147.6	3.5L PFDI (RWD/AWD)	9,950	4,207/3,977	1,818/1,588	4,130/4,630	6,835	2,946/3,142	2,797/2,831	5,743/5,973
T-350 DRW/147.6	3.5L EcoBoost (RWD/AWD)	9,950	4,124/3,897	1,735/1,508	4,130/4,630	6,835	3,008/3,203	2,818/2,850	5,826/6,063
T-350HD DRW/147.6	3.5L PFDI (RWD)	10,360	4,617	2,198	4,130	7,275	2,946	2,797	5,743
T-350HD DRW/147.6	3.5L EcoBoost (RWD/AWD)	10,360	4,534/4,307	2,115/1,888	4,130/4,630	7,275	3,008/3,203	2,818/2,850	5,826/6,053
T-350HD DRW/147.6	3.5L EcoBoost (RWD/AWD)	11,000	5,174/4,947	2,115/1,888	4,630	7,700	3,008/3,203	2,818/2,850	5,826/6,053

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Crew Van RWB, Low Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/129.9	3.5L PFDI (RWD/AWD)	8,670	3,362/3,166	2,253/2,057	4,130/4,630	5,515	3,051/3,244	2,257/2,260	5,308/5,504
T-150/129.9	3.5L EcoBoost (RWD/AWD)	8,670	3,280/3,082	2,172/1,973	4,130/4,630	5,515	3,116/3,312	2,273/2,276	5,389/5,588
T-250/129.9	3.5L PFDI (RWD/AWD)	9,070	3,762/3,566	2,253/2,057	4,130/4,630	5,750	3,051/3,244	2,257/2,260	5,308/5,504
T-250/129.9	3.5L EcoBoost (RWD/AWD)	9,070	3,680/3,482	2,172/1,973	4,130/4,630	5,750	3,116/3,312	2,273/2,276	5,389/5,588
T-350/129.9	3.5L PFDI (RWD/AWD)	9,250	3,942/3,746	2,253/2,057	4,130/4,630	5,750	3,051/3,244	2,257/2,260	5,308/5,504
T-350/129.9	3.5L EcoBoost (RWD/AWD)	9,250	3,860/3,662	2,172/1,973	4,130/4,630	5,750	3,116/3,312	2,273/2,276	5,389/5,588

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Crew Van RWB, Medium Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/129.9	3.5L PFDI	8,670	3,232/3,036	2,123/1,927	4,130/4,630	5,515	3,075/3,268	2,363/2,366	5,438/5,634

	(RWD/AWD)								
T-150/129.9	3.5L EcoBoost (RWD/AWD)	8,670	3,145/2,947	2,037/1,838	4,130/4,630	5,515	3,146/3,341	2,378/2,382	5,524/5,723
T-250/129.9	3.5L PFDI (RWD/AWD)	9,070	3,632/3,436	2,123/1,927	4,130/4,630	5,750	3,075/3,268	2,363/2,366	5,438/5,634
T-250/129.9	3.5L EcoBoost (RWD/AWD)	9,070	3,546/3,347	2,037/1,838	4,130/4,630	5,515	3,146/3,341	2,378/2,382	5,524/5,723
T-350/129.9	3.5L PFDI (RWD/AWD)	9,250	3,812/3,616	2,123/1,927	4,130/4,630	5,750	3,075/3,268	2,363/2,366	5,438/5,634
T-350/129.9	3.5L EcoBoost (RWD/AWD)	9,250	3,725/3,527	2,037/1,838	4,130/4,630	5,750	3,145/3,341	2,379/2,382	5,424/5,723

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Crew Van LWB, Low Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/147.6	3.5L PFDI (RWD/AWD)	8,670	3,259/3,052	2,151/1,944	4,130/4,630	5,070	3,166/3,363	2,244/2,254	5,410/5,617
T-150/147.6	3.5L EcoBoost (RWD/AWD)	8,670	3,185/2972	2,076/1,863	4,630	5,070	3,232/3,428	2,253/2,269	5,485/5,698
T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,659/3,452	2,151/1,944	4,130/4,630	5,515	3,166/3,363	2,244/2,254	5,410/5,617
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,584/3,371	2,076/1,862	4,630	5,515	3,231/3,427	2,255/2,272	5,486/5,699
T-350/147.6	3.5L PFDI (RWD/AWD)	9,500	4,089/3,882	2,151/1,944	4,130/4,630	5,750	3,166/3,363	2,244/2,254	5,410/5,617
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	4,023/3,810	2,084/1,871	4,630	5,750	3,232/3,428	2,245/2,261	5,477/5,690

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Crew Van LWB, Medium Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-150/147.6	3.5L PFDI (RWD/AWD)	8,670	3,111/2,904	2,003/1,796	4,130/4,630	5,070	3,202/3,399	2,356/2,366	5,558/5,765
T-150/147.6	3.5L EcoBoost (RWD/AWD)	8,670	3,038/2,825	1,929/1,716	4,630	5,070	3,266/3,462	2,366/2,382	5,632/5,845

T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,511/3,304	2,003/1,796	4,130/4,630	5,515	3,202/3,399	2,356/2,366	5,558/5,765
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,438/3,225	1,929/1,716	4,630	5,515	3,266/3,462	2,366/2,382	5,632/5,845
T-350/147.6	3.5L PFDI (RWD/AWD)	9,500	3,941/3,734	2,003/1,796	4,130/4,630	5,750	3,202/3,399	2,356/2,366	5,558/5,765
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	3,868/3,655	1,929/1,716	4,630	5,750	3,266/3,462	2,366/2,382	5,632/5,845

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Crew Van LWB, High Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-250/147.6	3.5L PFDI (RWD/AWD)	9,070	3,416/3,209	1,908/1,701	4,130/4,630	5,515	3,228/3,425	2,425/2,435	5,653/5,860
T-250/147.6	3.5L EcoBoost (RWD/AWD)	9,070	3,343/3,130	1,834/1,621	4,630	5,515	3,294/3,491	2,433/2,449	5,727/5,940
T-350/147.6	3.5L PFDI (RWD/AWD)	9,500	3,846/3,639	1,908/1,701	4,130/4,630	5,750	3,228/3,425	2,425/2,435	5,653/5,860
T-350/147.6	3.5L EcoBoost (RWD/AWD)	9,500	3,779/3,566	1,840/1,627	4,630	5,750	3,294/3,490	2,427/2,443	5,721/5,934

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Crew Van LWB-EL, High Roof Weight Ratings

Model/ Wheelbase (in.)	Engine/ Drivetain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
					Front	Rear	Front	Rear	Total
T-350HD DRW/147.6	3.5L PFDI (RWD/AWD)	9,950	3,884/3,654	1,495/1,265	4,130/4,630	6,835	3,097/3,294	2,969/3,002	6,066/6,296
T-350HD DRW/147.6	3.5L EcoBoost (RWD/AWD)	9,950	3,786/3,574	1,398/1,185	4,630	6,835	3,158/3,354	3,005/3,022	6,163/6,376
T-350HD DRW/147.6	3.5L PFDI (RWD)	10,360	4,294	1,875	4,130	7,275	3,097	2,969	6,066
T-350HD DRW/147.6	3.5L EcoBoost (RWD/AWD)	10,360	4,196/3,984	1,778/1,565	4,630	7,275	3,097/3,294	2,969/3,002	6,066/6,296

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Passenger Van RWB, Low Roof Weight Ratings

Model/ Wheelbase (in.)	Passengers	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
						Front	Rear	Front	Rear	Total
T-150/129.9	10	3.5L PFDI (RWD/ AWD)	8,550	2,918/ 2,722	1,399/1,203	4,130/ 4,380	5,070	3,047/3,240	2,584/2,587	5,631/ 5,827

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > Weight Ratings

Passenger Van RWB, Medium Roof Weight Ratings

Model/ Wheelbase (in.)	Passengers	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
						Front	Rear	Front	Rear	Total
T-150/129.9	10	3.5L PFDI (RWD/ AWD)	8,550	2,734/ 2,538	1,215/1,019	4,130/ 4,380	5,070	3,085/ 3,279	2,730/ 2,733	5,815/6,011

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > Weight Ratings

Passenger Van LWB, Low Roof Weight Ratings

Model/ Wheelbase (in.)	Passengers	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
						Front	Rear	Front	Rear	Total
T-350/147.6	12	3.5L PFDI (RWD/ AWD)	9,250	3,226/ 3,019	1,407/1,200	4,130/ 4,465	5,780	3,213/3,410	2,810/ 2,820	6,023/ 6,230
T-350/147.6	12	3.5L EcoBoost (RWD/ AWD)	9,250	3,144/ 2,940	1,325/1,121	4,130/ 4,465	5,780	3,279/ 3,474	2,826/ 2,835	6,105/ 6,309
T-350/147.6	15	3.5L PFDI (RWD)	9,400	3,376	1,107	4,130	5,780	3,213	2,810	6,023
T-350/147.6	15	3.5L EcoBoost (RWD)	9,400	3,294	1,025	4,130	5,780	3,279	2,826	6,105
T-350/147.6	15	3.5L PFDI (AWD)	9,550	3,319	1,050	4,465	5,830	3,410	2,820	6,230
T-350/147.6	15	3.5L EcoBoost (AWD)	9,550	3,240	971	4,465	5,830	3,474	2,835	6,309

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > **Specs** > **Dimensions/Weights/Capabilities** > Weight Ratings

Passenger Van LWB, Medium Roof Weight Ratings

Model/ Wheelbase (in.)	Passengers	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
						Front	Rear	Front	Rear	Total
T-350/147.6	12	3.5L PFDI (RWD/ AWD)	9,250	3,097/ 2,890	1,278/1,071	4,130/ 4,465	5,780	3,252/ 3,449	2,900/2,911	6,152/ 6,359
T-350/147.6	12	3.5L EcoBoost (RWD/ AWD)	9,250	3,015/2,810	1,195/991	4,130/ 4,465	5,780	3,317/3,511	2,918/ 2,928	6,235/ 6,439
T-350/147.6	15	3.5L PFDI (RWD)	9,400	3,240	971	4,130	5,780	3,258	2,901	6,159
T-350/147.6	15	3.5L EcoBoost (RWD)	9,400	3,161	892	4,130	5,780	3,321	2,917	6,238
T-350/147.6	15	3.5L PFDI (AWD)	9,550	3,183	914	4,465	5,830	3,454	2,912	6,366
T-350/147.6	15	3.5L EcoBoost (AWD)	9,550	3,107	839	4,465	5,830	3,516	2,927	6,442

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Passenger Van LWB, High Roof Weight Ratings

Model/ Wheelbase (in.)	Passengers	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
						Front	Rear	Front	Rear	Total
T-350/147.6	12	3.5L PFDI (RWD/ AWD)	9,250	2,951/2,744	1,132/925	4,130/ 4,465	5,780	3,257/ 3,454	3,041/ 3,052	6,298/ 6,505
T-350/147.6	12	3.5L EcoBoost (RWD/ AWD)	9,250	2,869/ 2,665	1,049/845	4,130/ 4,465	5,780	3,323/3,517	3,058/ 3,068	6,381/ 6,585
T-350/147.6	15	3.5L PFDI (RWD)	9,400	3,103	833	4,130	5,780	3,257	3,040	6,297
T-350/147.6	15	3.5L EcoBoost (RWD)	9,400	3,019	749	4,130	5,780	3,323	3,058	6,381
T-350/147.6	15	3.5L PFDI (AWD)	9,550	3,046	776	4,465	5,830	3,454	3,050	6,504
T-350/147.6	15	3.5L EcoBoost (AWD)	9,550	2,965	695	4,465	5,830	3,517	3,068	6,585

2022 Transit > Specs > Dimensions/Weights/Capabilities > Weight Ratings

Passenger Van LWB-EL, High Roof Weight Ratings

Model/ Wheelbase (in.)	Passengers	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	ARC Weight (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		

						Front	Rear	Front	Rear	Total
T-350HD DRW/ 147.6.0	15	3.5L PFDI (RWD)	10,360	3,494	1,076	4,130	6,725	3,093	3,772	6,865
T-350HD DRW/ 147.6.0	15	3.5L EcoBoost (RWD/ AWD)	10,360	3,412/3,184	993/766	4,130/ 4,465	6,725	3,159/ 3,353	3,789/ 3,822	6,948/ 7,175

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

Chassis Cab, Low Roof Weight Ratings

Model/ Length (in.)	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
				Front	Rear	Front	Rear	Total
T-250/138	3.5L PFDI (RWD/AWD)	9,070	4,826/4,619	4,130/4,630	5,515	2,982/3,177	1,261/1,274	4,243/4,450
T-250/138	3.5L EcoBoost (RWD/AWD)	9,070	4,736/4,529	4,130/4,630	5,515	3,052/3,247	1,282/1,294	4,334/4,541
T-350/138	3.5L PFDI (RWD/AWD)	9,500	5,266/5,049	4,130/4,630	5,750	2,982/3,177	1,261/1,274	4,243/4,450
T-350/138	3.5L EcoBoost (RWD/AWD)	9,500	5,166/4,959	4,130/4,630	5,750	3,052/3,247	1,282/1,294	4,334/4,541
T-350HD DRW/138	3.5L PFDI (RWD/AWD)	9,950	5,527/5,303	4,130/4,630	6,835	2,991/3,186	1,431/1,461	4,422/4,647
T-350HD DRW/138	3.5L EcoBoost (RWD/AWD)	9,950	5,437/5,212	4,130/4,630	6,835	3,061/3,256	1,452/1,481	4,513/4,737
T-350HD DRW/138	3.5L EcoBoost (RWD/AWD)	10,360	5,884/5,660	4,130/4,630	7,275	3,035/3,230	1,440/1,470	4,475/4,700
T-350HD DRW/138	3.5L EcoBoost (RWD/AWD)	11,000	6,452/6,238	4,630	7,275	3,052/3,248	1,496/1,513	4,548/4,761
T-250/155.7	3.5L PFDI (RWD/AWD)	9,070	4,787/4,584	4,130/4,630	5,515	3,023/3,215	1,260/1,270	4,283/4,485
T-250/155.7	3.5L EcoBoost (RWD/AWD)	9,070	4,696/4,494	4,130/4,630	5,515	3,094/3,285	1,280/1,291	4,374/4,576
T-350/155.7	3.5L PFDI (RWD/AWD)	9,500	5,216/5,013	4,130/4,630	5,750	3,024/3,216	1,260/1,270	4,284/4,486
T-350/155.7	3.5L EcoBoost (RWD/AWD)	9,500	5,125/4,923	4,130/4,630	5,750	3,095/3,286	1,280/1,291	4,375/4,577
E-Transit T-350/178	Battery Electric (RWD only)	9,500	4,390	3,815	6,000	3,053	2,056	5,109
T-350HD DRW/155.7	3.5L PFDI (RWD/AWD)	9,950	5,501/5,281	4,130/4,630	6,835	3,024/3,216	1,425/1,453	4,449/4,669
T-350HD DRW/155.7	3.5L EcoBoost (RWD/AWD)	9,950	5,410/5,190	4,130/4,630	6,835	3,095/3,286	1,445/1,473	4,540/4,759
T-350HD DRW/155.7	3.5L EcoBoost (RWD/AWD)	10,360	5,789/5,569	4,130/4,630	7,275	3,128/3,320	1,443/1,470	4,571/4,790
T-350HD DRW/155.7	3.5L EcoBoost (RWD/AWD)	11,000	6,356/6,148	4,630	7,275	3,145/3,338	1,498/1,514	4,643/4,852
T-350HD	3.5L PFDI	9,950	5,391/5,168	4,130/4,630	6,835	3,109/3,304	1,449/1,478	4,558/4,782

DRW/178	(RWD/AWD)							
T-350HD DRW/178	3.5L EcoBoost (RWD/AWD)	9,950	5,301/5,077	4,130/4,630	6,835	3,180/3,374	1,469/1,499	4,649/4,873
T-350HD DRW/178	3.5L EcoBoost (RWD/AWD)	10,360	5,717/5,493	4,130/4,630	7,275	3,189/3,383	1,453/1,483	4,642/4,866
T-350HD DRW/178	3.5L EcoBoost (RWD/AWD)	11,000	6,285/6,072	4,606	7,275	3,206/3,402	1,509/1,526	4,715/4,927

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

Cutaway Low Roof Weight Ratings

Model/ Length (in.)	Engine/ Drivetrain	Max. GVWR (lbs.)	Max. Payload (lbs.)	Max. Std. Spring Select GAWR (lbs.)		Base Curb Weight (lbs.)		
				Front	Rear	Front	Rear	Total
T-250/138	3.5L PFDI (RWD/AWD)	9,070	4,846/4,639	4,130/4,630	5,515	2,971/3,166	1,252/1,264	4,223/4,430
T-250/138	3.5L EcoBoost (RWD/AWD)	9,070	4,756/4,548	4,130/4,630	5,515	3,041/3,236	1,273/1,285	4,314/4,521
T-350/138	3.5L PFDI (RWD/AWD)	9,500	5,276/5,069	4,130/4,630	5,750	2,971/3,166	1,252/1,264	4,223/4,430
T-350/138	3.5L EcoBoost (RWD/AWD)	9,500	5,186/4,978	4,130/4,630	5,750	3,041/3,236	1,273/1,285	4,314/4,521
T-350HD DRW/138	3.5L PFDI (RWD/AWD)	9,950	5,560/5,336	4,130/4,630	6,835	2,971/3,166	1,418/1,448	4,389/4,614
T-350HD DRW/138	3.5L EcoBoost (RWD/AWD)	9,950	5,470/5,245	4,130/4,630	6,835	3,041/3,236	1,439/1,468	4,480/4,704
T-350HD DRW/138	3.5L EcoBoost (RWD/AWD)	10,360	5,899/5,674	4,130/4,630	7,275	3,027/3,222	1,434/1,463	4,461/4,685
T-350HD DRW/138	3.5L EcoBoost (RWD/AWD)	11,000	6,466/6,253	4,630	7,275	3,044/3,241	1,489/1,506	4,533/4,747
T-250/155.7	3.5L PFDI (RWD/AWD)	9,070	4,787/4,584	4,130/4,630	5,515	3,023/3,215	1,260/1,270	4,283/4,485
T-250/155.7	3.5L EcoBoost (RWD/AWD)	9,070	4,696/4,494	4,130/4,630	5,515	3,093/3,285	1,280/1,291	4,374/4,576
T-350/155.7	3.5L PFDI (RWD/AWD)	9,500	5,217/5,015	4,130/4,630	5,750	3,023/3,215	1,260/1,270	4,282/4,485
T-350/155.7	3.5L EcoBoost (RWD/AWD)	9,500	5,127/4,924	4,130/4,630	5,750	3,094/3,285	1,280/1,291	4,373/4,575
T-350HD DRW/155.7	3.5L PFDI (RWD/AWD)	9,950	5,499/5,279	4,130/4,630	6,835	3,026/3,218	1,425/1,453	4,451/4,671
T-350HD DRW/155.7	3.5L EcoBoost (RWD/AWD)	9,950	5,408/5,188	4,130/4,630	6,835	3,097/3,288	1,455/1,473	4,542/4,761
T-350HD DRW/155.7	3.5L EcoBoost (RWD/AWD)	10,360	5,790/5,570	4,130/4,630	7,275	3,128/3,320	1,442/1,469	4,570/4,789
T-350HD DRW/155.7	3.5L EcoBoost (RWD/AWD)	11,000	6,357/6,149	4,630	7,275	3,145/3,338	1,497/1,513	4,642/4,851
E-Transit T-350/178	Battery Electric (RWD only)	9,500	4,428	3,815	6,000	3,029	2,043	5,072
T-350HD	3.5L PFDI	9,950	5,429/5,205	4,130/4,630	6,835	3,085/3,280	1,436/1,464	4,521/4,744

DRW/178	(RWD/AWD)							
T-350HD DRW/178	3.5L EcoBoost (RWD/AWD)	9,950	5,338/5,114	4,130/4,630	6,835	3,156/3,350	1,455/1,485	4,611/4,835
T-350HD DRW/178	3.5L EcoBoost (RWD/AWD)	10,360	5,781/5,557	4,130/4,630	7,275	3147/3,341	1,431/1,461	4,578/4,802
T-350HD DRW/178	3.5L EcoBoost (RWD/AWD)	11,000	6,349/6,136	4,630	7,275	3,164/3,360	1,487/1,504	4,651/4,863

NOTE: Weights are for single rear wheel (SRW) vehicles unless otherwise noted.

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Standard Equipment

DRIVE:		RWD
Powertrain		Refer to the ordering guide for 50 states usage
Engine	Type	3.5L PFDI V6
Transmission	Type	10-speed automatic overdrive with Selectable Drive Modes
	Speeds	10
Axles		
Rear Axle	Type — Full-floating	Sterling circular flange
	Capacity (Rating @ Ground)	Max. — 6,000 lbs. (SRW)/7,275 lbs. (DRW)
Brakes		
Front/Rear Disc	Type	Power disc
	Rotor Diameter — Front/Rear (in.)	12.1/12.1
Power Assist Unit	Type	Vacuum, RSC
	Effective Diameter (in.)	NA
Anti-Lock Braking System		4-wheel (4-channel); AdvanceTrac with RSC (Roll Stability Control)
Parking Brake (Rear Brakes) (in.)		Electric
Electrical		
Alternator	Rating	250-amp, 3,375-watt (V6 engines)
Battery	Type	Maintenance-free
	Rating	70-AH, 610 CCA (3.5L PFDI V6)
Fuel Tank	Capacity (gal.)	25
Jack	Capacity (lbs.)	NA
Steering	Type	Electric power-assisted steering
	Ratio	Overall on-center ratio is 19:1 (steering wheel angle to road wheel angle)
Suspension		
Frame	Type	K-frame
Springs, Front	Type	Independent MacPherson-strut
	Rating @ Ground (min.)	Refer to weight ratings for usage and ratings
Springs, Rear	Type	Leaf single stage constant rate

	Rating @ Ground (min.)	Refer to weight ratings for usage and ratings
Shock Absorbers	Gas-type (in.)	Heavy-duty (rear)
Stabilizer Bar	Front/Rear (mm)	21/25/25 (solid)/32 (hollow)
Tires	Type/Size	235/65R16C 121/119R (SRW) 195/75R16C 107/105R (DRW) ETRO
	Spare Tire Carrier	Full-size spare tire and wheel
Wheels	Type and Size	16" steel

NOTE: Refer to Weight Ratings for Standard and Available Weight Rating Specifications (GVWR/Payload/Spring and GAWR/Base Curb Weight).

2022 Transit > Specs

Powertrain

Engine | Transmission

2022 Transit > Specs > Powertrain

Engine

Driveline Layout	Front Engine, Rear Wheel Drive/All-Wheel Drive (RWD/AWD)		Rear Wheel Drive
Engine Type	3.5L PFDI V6	3.5L EcoBoost V6	Electric Motor (E-Transit)
Displacement (liters/cu. in.)	3.5/213	3.5/213	Not Applicable
Horsepower (@ rpm for gas engine)	275 @ 6,250	310 @ 5,000 (RWD) 295 @ 5,500 (AWD)	266(1) (198 kW)
Torque (lb.-ft. @ rpm for gas engine)	260 @ 4,000	400 @ 2,500 (RWD) 375 @ 2,500 (AWD)	317(1)
Compression Ratio	10.0:1	11.8:1	Not Applicable
Valvetrain	Ti VCT DOHC	Ti VCT DOHC	
Valve Operation	Direct-acting mechanical bucket	Direct-acting mechanical bucket	
Bore & Stroke (in.)	3.64 x 3.41	3.64 x 3.41	
Main bearings	4	4	
Induction	Naturally aspirated	Twin turbocharged	
Fuel System	Port Fuel Direct-Injection (PFDI) dual system	Gasoline Turbocharged Direct Injection (GTDI) system	
Fuel Requirement (octane)	87 (min.)	87 (min.)	

(1) Calculated via peak performance of the electric motor(s) at peak battery power. Your results may vary. Horsepower and torque are independent attributes and may not be achieved simultaneously.

2022 Transit > Specs > Powertrain

Transmission

Make/Type	Ford 10-speed Automatic Overdrive (10R80)
Engine	3.5L PFDI V6, 3.5L EcoBoost V6

Ratios (to 1):	
1st	4.696
2nd	2.985
3rd	2.146
4th	1.769
5th	1.520
6th	1.275
7th	1.000
8th	0.854
9th	0.689
10th	0.636
Reverse	4.866
Converter Size and Type	238 mm/double-damper with pendulum
Converter Stall Ratio	1.83:1
Lubricant Capacity (qt.)	12.4 with top-off for cooler
Planetary	Simple (4)
Helical Gears	All
Oil Cooler	Yes, fasteners to transmission
Turbine Speed Sensor System	Yes with (4) internal speed sensors
Fully Electronic Shift Scheduling	Yes
Weight (with Fluid)	TBD lbs. (RWD)/TBD lbs. (AWD)

2022 Transit > Specs

Chassis

Brake Master Cylinder Specifications
Cooling System Specifications
Front/Rear Disc
Rear Axle

2022 Transit > Specs > Chassis

Rear Axle

		SRW/DRW
Make		Sterling
Max. Rating @ Ground (lbs.)		6000/7275
Driveline Attachment	Type	Circular Flange
	Bolt Circle (in.)	4.25
Housing	Type	Cast Iron Carrier
	Size (in.)	9.75
	Cover Attachment	Steel
Section	Tube Dia. (in.)	3.24
	Thickness (in.)	SRW — 0.31/0.32 and 0.25/0.27

		DRW — 0.39/0.46
Synthetic Lubricant	Type	75W85
	Capacity (pts.)	6.0–6.15 (Conventional) 5.75–5.90 (Limited-slip)
Spring Centers (in.)		48.51/43.70
Wheel Bearings	Type	Tapered Roller
Gears	Type	Hypoid
	Material	Steel
Ring Gear	Pitch Dia. (in.)	9.75
Pinion	Mounting	Straddle
Differential	Type	Conventional and Limited-slip
Axle Shaft	Spline Minor Dia. (in.)	1.29
	Spine Major Dia (in.)	1.37
	No. of Spline	34

2022 Transit > Specs > Chassis

Front/Rear Disc

Type	Series/ Model	Axle Usage (lbs.)	Rotor Dia. (in.)		Brake Lining Segment	Area (sq. in.)/ Width (in.)/ Thickness (in.)	Caliper Piston No. Dia. (in.)	Gross LiningArea Per Axle (sq. in.)	Total Swept Area Per Axle (sq. in.)
			OD	ID					
Front Disc	Cargo Van/Crew Van	All	12.1	6.5	Outboard	8.4/2.3/0.33	2 x 1.89	16.8	163.0
					Inboard	8.4/2.3/0.33	2 x 1.89	16.8	163.0
	Passenger Van	All	12.1	6.5	Outboard	8.4/2.3/0.33	2 x 1.89	16.8	163.0
					Inboard	8.4/2.3/0.33	2 x 1.89	16.8	163.0
	Cutaway/Chassis Cab	All	12.1	6.5	Outboard	8.4/2.3/0.33	2 x 1.89	16.8	163.0
					Inboard	8.4/2.3/0.33	2 x 1.89	16.8	163.0
Rear Disc	Cargo Van/Crew Van	All	12.1	7.9	Outboard	6.0/1.9/0.41	1 x 2.13	12.0	133.0
					Inboard	6.0/1.9/0.41	1 x 2.13	12.0	133.0
	Passenger Van	All	12.1	7.9	Outboard	6.0/1.9/0.41	1 x 2.13	12.0	133.0
					Inboard	6.0/1.9/0.41	1 x 2.13	12.0	133.0
	Cutaway/Chassis Cab	All	12.1	7.9	Outboard	6.0/1.9/0.41	1 x 2.13	12.0	133.0
					Inboard	6.0/1.9/0.41	1 x 2.13	12.0	133.0

2022 Transit > Specs > Chassis

Brake Master Cylinder Specifications

Type	Series/Model	Bore Dia. (in.)	Booster Type
Dual System, Dash-mounted	N/A	1.125	10+10 Tandem

2022 Transit > Specs > Chassis

Cooling System Specifications

Engine	Core Size (in.)			Rows of Tubes	Fins Per Inch	Cooling System Capacity (qts.)	In-tank Trans. Cooler	Fan Specifications		
	Height	Width	Thick-ness					Type	No. of Blades	Blade Dia. (in.)
3.5L PFDI V6	19.25	30.31	0.99	1	21.6	12.4 (Base) 13.6 (Aux.)	NA	Twin Electric	7+7	12.2 15.16
3.5L EcoBoost V6	19.25	30.31	0.99	1	21.6	12.4 (Base) 13.6 (Aux.)	NA	Twin Electric	7+7	12.2 15.16

2022 Transit > Specs

Electrical

250 Amperes Alternator
Alternator Specifications
Battery Applications
Cold Weather Recommendations
Light Specifications and Usage
Standard Lighting/Reflector Equipment
Trailer Towing Wiring Harness

2022 Transit > Specs > Electrical

Alternator Specifications

Output (ampere)[1]	250
Output (watts)	3,375

(1) Gas engines only. Actual output is temperature- and application-dependent.

2022 Transit > Specs > Electrical > Alternator Performance Curves

250 Amperes Alternator

Gas Engine Only	Pulley Ratio	Model Application
All	2.67:1	Transit

2022 Transit > Specs > Electrical

Battery Applications

Ampere-Hour (AH) Rating	70	70
Cold-Cranking Amps (CCA) at 0°F	610	760
Transit		

3.5L EcoBoost V6	Std.	Opt.(1)(2)
3.5L PFDI V6	Std.(2)	Opt.(1)(2)

(1) Dual batteries — 1520 CCA.

(2) Absorbent Glass Mat (AGM) battery.

2022 Transit > Specs > Electrical

Cold Weather Recommendations

Minimum Temperature	Equipment	
	HD Battery	Engine Block Heater
0° F	Suggested	Not Needed
-10° F	Recommended	Suggested
-20° F	Recommended	Recommended
Below -20° F	Strongly Recommended	Strongly Recommended

DEFINITIONS

Suggested: Helpful, but not needed.

Recommended: Could improve reliability in less-than-ideal conditions.

Strongly Recommended: Will give definite improvement over the standard components.

HD Battery: Higher-capacity battery available. (Usage varies by model.)

Engine Block Heater: Available equipment for all engines. (Usage and heater capacity vary with engine requirements.)

2022 Transit > Specs > Electrical

Standard Lighting/Reflector Equipment

Light Reflector	Application
Headlamps (Halogen)	All Series — Two replaceable bulbs with all models
Parking Lamps	All Series — Integral with turn signals
Front/Rear Turn Signals	All Series
Front Side Marker Lamps	All Series
Front Side Reflectors	All Series
Rear Side Reflectors	All Series
Rear Side Marker Lamps	All Series — Integral with taillamps
License Plate Lamps	All Series
Two Combination Taillamps with Integral Stop, Turn Signal, Backup Lamps and Reflective Surface	All Series
Rear Reflectors	All Series
Front Daytime Running Lamps	All Vehicles Registered in Canada

2022 Transit > Specs > Electrical

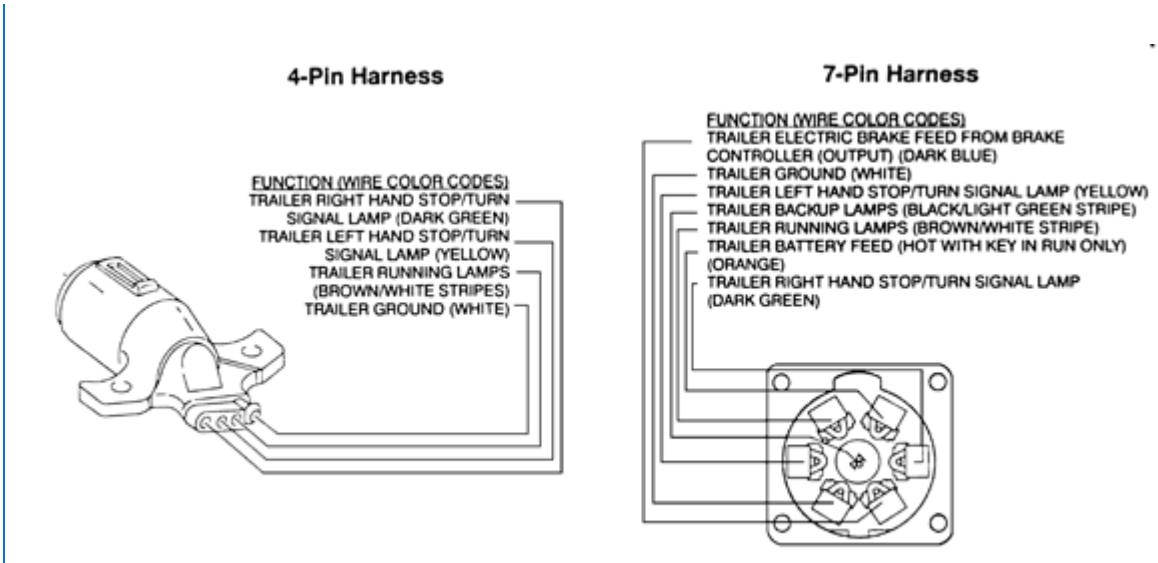
Light Specifications and Usage

Lamp	Code	Description	Usage
Cab Marker — (5 lights) Amber	STD	Torpedo, Hella	All Model Series
Daytime Running Lamps	STD	(2) Replaceable Bulbs, Halogen	All Vehicles Registered in Canada
Headlamps	STD	(2) Replaceable Bulbs, Halogen	All Vehicles Registered in U.S. and Canada

2022 Transit > Specs > Electrical

Trailer Towing Wiring Harness

Circuit Number	Circuit Description	Color Code
RAT08	Ground	White
CAT17	Parking Lamps	Brown
CAT14	Trailer Battery Feed	Orange
CAT19	To Electric Brakes	Dark Blue
CAT09	RH Turn Signal and Stop Lamps	Dark Green
CAT06	LH Turn Signal and Stop Lamps	Yellow
CAT03/CAT16	Trailer Backup Lamps	Gray with Brown Stripe
CBP30	Front Brake Controller Running Lamp Feed/Park Lamp Feed	Yellow with Blue Stripe
CBP40	Rear Brake Controller Running Lamp Feed/Park Lamp Feed	Yellow with Green Stripe
CLS30	Brake Controller Running Lamp Feed/Park Lamp Feed	Violet with White Stripe
CCB08	Vehicle Stop Lamps	Violet with White Stripe
SBB18/SBB17	B+ to Electric Brake Controller	Yellow with Red Stripe

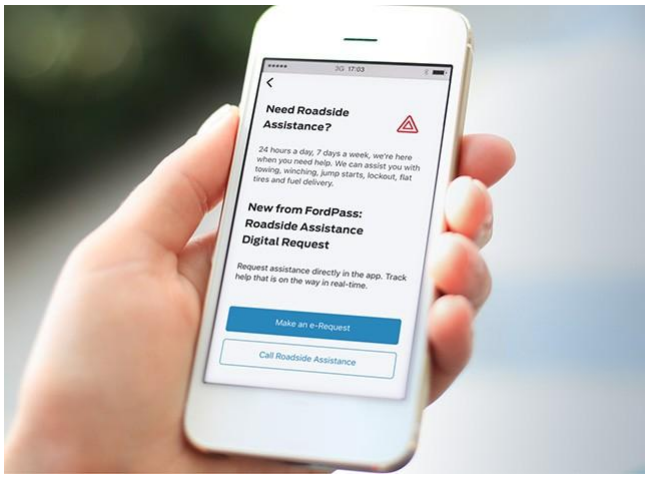


2022 Transit > Specs

Warranties

24-HOUR ROADSIDE ASSISTANCE(1)

- Owners can call the toll-free number (1-800-241-3673) 24 hours a day
- Customers can also use their FordPass(2) App:
  - Tap the red Hazard icon at the top of the screen
  - Tap the Make an e-Request button
  - Follow the prompts, which allow owners to identify the type of service they need
  - Owners can follow real-time progress of their request on the FordPass map
- Services available include flat tire change, towing to the nearest Ford dealership, fuel delivery, jump start and lockout assistance
- The FordPass App also offers a link to Accident Assistance under Vehicle Details/Vehicle Support
  - Accident Assistance includes information on what to do in an accident and about collision repairs
  - It also provides a collision shop locator that identifies the nearest Ford Certified Collision Center



POWERTRAIN LIMITED WARRANTY

- Powertrain Limited Warranty for Ford vehicles is 5 years or 60,000 miles, whichever comes first
  - 8 years or 100,000 miles (whichever comes first) for E-Transit EV components
- That's an additional 2 years/24,000 miles (whichever comes first) of coverage beyond the bumper-to-bumper coverage for components such as the engine, transmission and front- or rear-wheel-drive parts

NEW VEHICLE LIMITED WARRANTIES

- 3-year/36,000-mile (whichever comes first) bumper-to-bumper; no deductible
- 5-year/60,000-mile (whichever comes first) Powertrain Limited Warranty
- 5-year/unlimited-mileage (whichever comes first) Corrosion Perforation (aluminum panels don't require perforation)
- 5-year/60,000-mile (whichever comes first) Safety Restraint Warranty

(1) Roadside Assistance is included for certain owners and available to everyone for a per-service fee. Ford reserves the right to change program details without obligations. Ford Roadside Assistance is a complimentary offering to all Ford owners for up to 5 years or 60,000 miles (from the date of sale), whichever occurs first.

(2) FordPass, compatible with select smartphone platforms, is available via a download. Message and data rates may apply.

NOTE: See **www.motorcraftservice.com** for a link to a printable PDF of the Warranty Guide.

MobilityTRANS
Paratransit & Passenger Vans

Exhibit 1, Supporting Document 2

Vans as we are proposing are exempt from Altoona Testing because there are only limited modifications. The excerpt below is from the FTA Bus testing website.

Q. I am trying to purchase two E-350 vans from Ford. The grant person who is my contact wants the Altoona testing certificate from the Ford dealer but the dealer cannot find this information. Does this testing requirement apply to this type of vehicle?

A. The requirement for Altoona testing would depend on the extent (if any) to which the vans are modified from the stock configuration. If these are unmodified Ford E-350 vans, or they have had only limited modifications (e.g., adding a lift or raised roof) performed in strict compliance with Ford's Vehicle Modification Guidelines, then the Bus Testing Regulation (49 CFR Part 665) would consider them to be "unmodified mass-produced vans" and they would be exempt from Bus Testing ("Altoona testing") requirements if offered in the 4-year/100,000-mile service life category. It sounds as if you would buy the vehicles directly from Ford. If that's the case, these vehicles would likely qualify as unmodified mass-produced vans.

From the FTA Bus Testing page:

Unmodified mass-produced van means a van that is mass-produced, complete and fully assembled as provided by an OEM. This shall include vans with raised roofs, and/or wheelchair lifts, or ramps that are installed by the OEM, or by a party other than the OEM provided that the installation of these components is completed in strict conformance with the OEM modification guidelines.

FTA wishes to clarify that this exemption historically assumed that unmodified mass-produced vans would only be offered in the 4-year, 100,000-mile service life category. Unmodified mass-produced vans are categorically exempted from testing by the Bus Testing Regulation only in the 4-year, 100,000-mile service life category; unmodified mass-produced vans offered in the 5-year, 150,000-mile (or higher) service life category are subject to testing.

Feel free to follow up with Gregory Rymarz if you have any additional questions.

Mr. Gregory Rymarz, Bus Testing Program Manager
Federal Transit Administration
Office of Mobility Innovation, TRI-12
Room E43-465
1200 New Jersey Ave. SE
East Building, 4th floor
Washington, DC 20590
Phone: 202-366-6410
Fax: 202-366-3765
E-mail: gregory.rymarz@dot.gov

Attachment C

TRANSIT VEHICLE MANUFACTURERS CERTIFICATION OF COMPLIANCE WITH 49 CFR PART 26.49

This procurement is subject to the provisions of 49 CFR, Part 26.49. Accordingly, as a condition of permission to propose, the following certification must be completed and submitted with the RFP along **with a current copy of the manufacturer's TVM DBE Goal Concurrence/Certification Letter from FTA**.

TRANSIT VEHICLE MANUFACTURER CERTIFICATION

Mobility TRANS, a TVM, hereby certifies that it has complied with
(Name of Manufacturer)

the requirements of 49 CFR Part 26.49 by submitting a current DBE goal to FTA. The goals apply to Federal Fiscal Year 2022, October 1, 2021 to September 30, 2022 and have been approved or not disapproved by FTA.

OR

_____, hereby certifies that the Manufacturer of the transit vehicle to
(Name of Dealer/Distributor)

be supplied, _____, has complied with the above-referenced
(Name of Manufacturer)

requirement of 49 CFR Part 26.49.

SIGNATURE _____

NAME Robert Barnes

TITLE Sales Engineer

COMPANY Mobility TRANS

DATE 3/8/22

Attachment D

PRE-AWARD and POST DELIVERY AUDIT REQUIREMENTS CERTIFICATION

Pre-Award and Post-Delivery Audit Requirements - The Proposer agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

1. Buy America Requirements: The Proposer shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Proposer certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly. (Attachment E)

2. Solicitation Specification Requirements: The Proposer shall submit evidence that it will be capable of meeting the RFP specifications. (Attachment F)

3. Federal Motor Vehicle Safety Standards (FMVSS): The Proposer shall submit 1) manufacturer's FMVSS self-certification that the vehicle(s) comply with all applicable FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations. (Attachment G)

SIGNATURE _____

NAME Robert Barnes

TITLE Sales Engineer

COMPANY Mobility TRANS

DATE 3/8/22

Attachment K

CERTIFICATION REGARDING GOVERNMENT-WIDE DEBARMENT AND SUSPENSION

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Bidder/Offeror is required to verify that none of the contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Bidder/Offeror is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by Fort Bend County. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to Fort Bend County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

DATE 3/8/22

SIGNATURE

COMPANY MobilityTRANS

NAME Robert Barnes

TITLE Sales Engineer

Attachment E

CERTIFICATE OF COMPLIANCE
WITH BUY AMERICA ROLLING STOCK REQUIREMENTS

The Proposer hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations at 49 C.F.R. Part 661.11.

The Proposer must submit with this RFP documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

SIGNATURE _____

NAME Robert Pierce

TITLE Sales Engineer

COMPANY MobiliTRANS

DATE 3/8/22

OR

CERTIFICATE OF NON-COMPLIANCE
WITH BUY AMERICA ROLLING STOCK REQUIREMENTS

The Proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

SIGNATURE _____

NAME _____

TITLE _____

COMPANY _____

DATE _____

Attachment F

PROPOSER SELF CERTIFICATION

1.) The Proposer certifies that the manufactured good(s) furnished will meet or exceed the specifications, and/or that the services rendered will comply with the terms of the solicitation or contract.

2.) The Proposer certifies that it has read all of the RFP, proposal, or contract documents and agrees to abide by the terms, certifications, and conditions thereof.

Description of Commodity or Service ADA Vans

SIGNATURE [signature]

NAME Robert Barnes

TITLE Sales Engineer

COMPANY Mobility TRANS

DATE 3/4/22

Attachment G

FMVSS (FEDERAL MOTOR VEHICLE SAFETY STANDARDS) CERTIFICATION

All vehicles provided by the vendor must comply with all applicable FMVSS. The Proposer shall submit with this RFP:

1) Manufacturer's self-certification that the vehicle(s) will comply with all applicable Federal Motor Vehicle Safety Standards (FMVSS) for each proposed vehicle model

or

2) Manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

SIGNATURE _____

NAME Robert Barnes

TITLE Sales Engineer

COMPANY Mobility TRANS

DATE 3/4/22

Attachment H

CERTIFICATE OF COMPLIANCE
WITH FTA'S BUS TESTING REQUIREMENTS

The Proposer certifies that the vehicle(s) offered in this procurement comply with 49 U.S.C. § 5323(c) and FTA's implementing regulation at 49 CFR Part 665, and any amendments thereto, according to one of the following three alternatives.

(Indicate with an "X" only one of the following statements.)

1. X The vehicles offered have been tested in accordance with 49 CFR Part 665. The vehicles being sold should have the identical configuration and major components as the vehicle in the test report(s), which must be submitted with this RFP. If the configuration or components are not identical, the manufacturer shall provide with its RFP a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing.

2. ___ The vehicles offered are a new model, or with a major change in configuration or components to be acquired, and will be tested and the full bus testing report(s) and any applicable partial testing report(s) will be submitted to the Purchaser before final acceptance of the first vehicle .

3. ___ The vehicles offered have been "grandfathered" (has been used in mass transit service in the United States before October 1, 1998, and is currently being produced without a major change in configuration or components), and submits with the RFP the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

The Proposer understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a manufacturer under the procedures in 49 CFR Part 29.

Funds will not be released until the purchasing agency gets a copy of the bus test (Altoona) reports, as appropriate, per 49 CFR 665.

SIGNATURE 

NAME Robert Barnes

TITLE Sales Engineer

COMPANY Mobility TRANS

DATE 3/8/22

MobilityTRANS

To Whom This May Concern:

Creative Bus Sales is authorized to sell and distribute MobilityTRANS products in the state of Texas. In addition Creative Bus Sales may sell vehicles from this bid in accordance with the bid.

If there are any questions feel free to contact MobilityTRANS directly.

Nick Brown

National Sales Manager

Nick@mobility

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet



Energy-Saving, Moisture Resistant XPS Insulation

ASTM C578 Type X, 15 psi minimum

Description

Owens Corning™ FOAMULAR® 150 extruded polystyrene (XPS) insulation is a closed cell, moisture-resistant rigid foam board well suited to meet the need for a wide variety of building applications.[3] FOAMULAR® 150 XPS insulation is ideal for many residential and commercial construction applications such as wall furring, perimeter/foundation, cavity wall, pre-cast concrete, crawl spaces, sheathing and other applications[3]. FOAMULAR® 150 XPS insulation is classified as a Type X product when tested in accordance with ASTM C578 and provides a long-term thermal performance of R-5 per inch.

Like all FOAMULAR® XPS products, FOAMULAR® 150 XPS insulation is made with Owens Corning's patented Hydrovac® process technology under strict quality control measures, which makes it highly resistant to moisture and permits the product to retain it's high R-value year after year even after prolonged exposure to moisture, and freeze/thaw cycling.

Key Features

- Excellent long-term stable insulating performance at R-5[1] per inch
- Exceptional moisture resistance, long-term durability
- Limited lifetime warranty[2]—maintains 90% of R-value and covers all ASTM C578 properties
- The only XPS foam to be GREENGUARD Children & Schools Certified℠
- The only XPS foam with certified recycled content—certified by Scientific Certification Systems (SCS) to contain a minimum 20% recycled content
- Will not corrode, rot or support mold growth
- Zero ozone depletion potential with 70% less global warming potential than our previous formula
- Reusable
- Lightweight, durable rigid foam panels are easy to handle and install
- Easy to saw, cut or score
- Versatile applications: sheathing, foundation walls, masonry cavity walls[3]
- Not for use in roofing. For roofing applications, use FOAMULAR® THERMAPINK® Extruded Polystyrene Insulation

Product type

- Minimum compressive strength of 15 psi
- Wide selection of sizes and thicknesses
- Available in square, tongue and groove or scored square edge
- Compliant with building codes and standards

Product Applications

High-performance FOAMULAR® 150 XPS insulation:

- Retards the transmission of water vapor and moisture in masonry walls
- Provides continuous insulation over steel stud framing, in insulated concrete sandwich panel walls, or in masonry unit cavity walls, or when used with non-penetrating, surface mounted furring systems over masonry or concrete walls
- Insulates and retains its properties in below grade perimeter and foundation applications, to complement the insulating sheathing envelope around the building framing
- FOAMULAR® 150 XPS insulation is ideal for below grade applications. Extruded polystyrene (XPS) is resistant to degradation from the components of common soils and will retain its insulating performance characteristics even after prolonged exposure to moisture.

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

- Provides a weather resistant barrier (when joints are sealed) to enhance the building resistance to air and moisture penetration.

Technical Information

This product is combustible. A protective barrier or thermal barrier is required as specified in the appropriate building code. For additional information, consult MSDS or contact Owens Corning World Headquarters at 1-800-GET-PINK®.

All construction should be evaluated for the necessity to provide vapor retarders. See current ASHRAE Handbook of Fundamentals.

FOAMULAR® 150 XPS Insulation is a non-structural material and must be installed on framing which is independently braced and structurally adequate to meet required construction and service loading conditions.

FOAMULAR® insulation can be exposed to the exterior during normal construction cycles. During that time some fading of color may begin due to UV exposure, and, if exposed for extended periods of time, some degradation or "dusting" of the polystyrene surface may begin. It is best if the product is covered within 60 days to minimize degradation. Once covered, the deterioration stops, and damage is limited to the thin top surface layers of cells. Cells below are generally unharmed and still useful insulation.

Typical Physical Properties[1]

FOAMULAR® 150 Extruded Polystyrene Insulation

Property	Test Method[2]	Value
Thermal Resistance[3], R-Value (180 day) minimum, hr•ft²•°F/Btu (RSI, °C•m²/W) @ 75°F (24°C) mean temperature	ASTM C518	
1" Thickness		5.0 (0.88)
1½" Thickness		7.5 (1.32
2" Thickness		10 (1.76)
2½" Thickness		12.5 (2.20)
3" Thickness		15 (2.64)
@ 40°F (4.4°C) mean temperature		
1" Thickness		5.4 (0.95)
1½" Thickness		8.1 (1.43)
2" Thickness		10.8 (1.90)
2½" Thickness		13.5 (2.38)
3" Thickness		16.2 (2.85)
Long Term Thermal Resistance, LTTR-Value[3,] minimum hr•ft²•°F/Btu (RSI, °C•m²/W) @ 75°F (24°C) mean temperature	CAN/ULC S770-03	
1" Thickness		5.0 (0.88)
1½" Thickness		7.8 (1.37)
2" Thickness		10.6 (1.87)
2½" Thickness		13.4 (2.36)
3" Thickness		16.2 (2.85)
Compressive Strength[4], minimum psi (kPa)	ASTM D1621	15 (103)
Flexural Strength[5], minimum psi (kPa)	ASTM C203	60 (414)
Water Absorption[6], maximum % by volume	ASTM C272	0.10
Water Vapor Permeance[7], maximum perm (ng/Pa•s•m²)	ASTM E96	1.5 (86)
Dimensional Stability, maximum % linear change	ASTM D2126	2.0
Flame Spread[8, 9]	ASTM E84	5
Smoke Developed[8, 9, 10]	ASTM E84	45-175
Oxygen Index[8], minimum % by volume	ASTM D2863	24
Service Temperature, maximum °F (°C)	—	165 (74)
Linear Coefficient of Thermal Expansion, in/in/°F (m/m/°C)	ASTM E228	3.5×10^{-5} (6.3×10^{-5})

1. Properties shown are representative values for 1" thick material, unless otherwise specified.
2. Modified as required to meet ASTM C578
3. R means the resistance to heat flow; the higher the value, the greater the insulation power. This insulation must be installed properly to get the marked R-value. Follow the manufacturer's instructions carefully. If a manufacturer's fact sheet is not provided with the material shipment, request this and review it carefully. R-values vary depending on many factors including the mean temperature at which the test is conducted, and the age of the sample at the time of testing. Because rigid foam plastic insulation products are not all aged in accordance with the same standards, it is useful to publish comparison R-value data. The R-value for FOAMULAR® XPS insulation is provided from testing at two mean temperatures, 40°F and 75°F, and from two aging (conditioning) techniques, 180 day real-time aged (as mandated by ASTM C578) and a method of accelerated aging sometimes called "Long Term Thermal Resistance" (LTTR) per CAN/ULC S770-03. The R-value at 180 day real-time age and 75°F mean temperature is commonly used to compare products and is the value printed on the product.
4. Values at yield or 10% deflection, whichever occurs first.
5. Value at yield or 5%, whichever occurs first.
6. Data ranges from 0.00 to value shown due to the level of precision of the test method.
7. Water vapor permeance decreases as thickness increases.
8. These laboratory tests are not intended to describe the hazards presented by this material under actual fire conditions.
9. Data from Underwriters Laboratories Inc.® classified. See Classification Certificate U-197.
10. ASTM E84 is thickness-dependent, therefore a range of values is given.

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

Product and Packaging Data
FOAMULAR® 150 Extruded Polystyrene Insulation

Material	Packaging
Extruded polystyrene closed cell foam, ASTM C578 Type X, 15 psi minimum	Shipped in poly-wrapped units with individually wrapped or banded bundles.

Thickness (in)	Product Dimensions Thickness (in) x Width (in) x Length (in)	Pallet (Unit) Dimensions (typical) Width (ft) x Length (ft) x Height (ft)	Square feet per Pallet	Board feet per Pallet	Bundles per Pallet	Pieces per Bundle	Pieces per Pallet	Edges
1	1 x 24 x 96	4 x 8 x 8	3,072	3,072	8	24	192	Square Edge, Scored Square Edge, Tongue & Groove
	1 x 24 x 96	4 x 8 x 8	3,072	3,072	8	24	192	
	1 x 48 x 96	4 x 8 x 8	3,072	3,072	8	12	96	
	1 x 48 x 96 (Half unit)	4 x 8 x 4	1,536	1,536	4	12	48	
	1 x 48 x 108	4 x 9 x 8	3,456	3,456	8	12	96	
1½	1.5 x 24 x 96	4 x 8 x 8	2,048	3,072	8	16	128	
	1.5 x 48 x 96	4 x 8 x 8	2,048	3,072	8	8	64	
2	2 x 24 x 96	4 x 8 x 8	1,536	3,072	8	12	96	
	2 x 48 x 96	4 x 8 x 8	1,536	3,072	8	6	48	
2½	2.5 x 48 x 96	4 x 8 x 8	1,152	2,830	4	9	36	
3	3 x 24 x 96	4 x 8 x 8	1,024	3,072	8	8	64	
	3 x 48 x 96	4 x 8 x 8	1,024	3,072	8	4	32	

1. Available lengths and edge configurations vary by thickness. See www.foamular.com for current offerings. Other sizes may be available upon request. Consult your local Owens Corning representative for availability.

Standards, Codes Compliance

- Meets ASTM C578 Type X
- UL Classified. A copy of UL Classification Certificate U-197 is available at www.foamular.com
- See ICC-ES ESR-1061 at www.icc-es.org
- ASTM E119 Fire Resistance Rated Wall Assemblies. See www.foamular.com for details.
- Meets California Quality Standards; HUD UM #71A
- Compliance verification by RADCO (AA-650)

Certifications and Sustainable Features of FOAMULAR® XPS Insulation

- FOAMULAR® XPS insulation is reusable
- FOAMULAR® XPS insulation is made with a zero ozone depletion formula
- Certified by Scientific Certification Systems to contain a minimum of 20% pre-consumer recycled polystyrene
- Certified to meet indoor air quality standards under the stringent GREENGUARD Indoor Air Quality Certification Program℠, and the GREENGUARD Children & Schools Certification Program℠
- Qualified as an ENERGY STAR® product, under the U.S. Environmental Protection Agency and the U.S. Department of Energy
- Approved under the National Association of Home Builders (NAHB) Research Center Green Seal of Approval
- Utilizing FOAMULAR® XPS insulation can help builders achieve green building certifications including the Environmental Protection Agency's ENERGY STAR®, the National Association of Home Builders' National Green Building certification, and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) certification
- FOAMULAR® XPS insulation may qualify for The Buy American provision of the American Recovery and Reinvestment Act (ARRA)

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

Environmental and Sustainability

Owens Corning is a worldwide leader in building material systems, insulation and composite solutions, delivering a broad range of high-quality products and services. Owens Corning is committed to driving sustainability by delivering solutions, transforming markets and enhancing lives. More information can be found at www.sustainability.owenscorning.com.

Warranty

FOAMULAR® XPS Insulation limited lifetime warranty maintains 90% of its R-value for the lifetime of the building and covers all ASTM C578 properties. See actual warranty for complete details, limitations and requirements at www.foamular.com or www.owenscorningcommercial.com.

Notes

1. R means the resistance to heat flow; the higher the R-value, the greater the insulating power.
2. See actual warranty for complete details, limitations and requirements.
3. Not for use in roofing. For roofing applications, use FOAMULAR® THERMAPINK® Extruded Polystyrene Insulation.

All products described here may not be available in all geographic markets. Consult your local sales office representative for more information.

For more information on the Owens Corning family of building products, contact your Owens Corning dealer, call 1-800-GET-PINK®, or access our web sites: www.foamular.com and www.owenscorning.com.

Disclaimer of Liability
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ENERGY STAR and the ENERGY STAR mark are registered trademarks of the U.S. Environmental Protection Agency.

This NAHB Research Center Green Approved mark is your assurance that a product is eligible for points toward National Green Building Certification. Visit www.GreenApprovedProducts.com for details.

LEED is a registered trademark of the U.S. Green Building Council.

OWENS CORNING FOAM INSULATION, LLC
ONE OWENS CORNING PARKWAY
TOLEDO, OHIO 43659
1-800-GET-PINK®
www.owenscorning.com

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BraunAbility®

NCL1000-2 Century Series™ Lift Guide

2-1-20



NCL1000-2 Century Series™ Features

- Fully automatic NHTSA compliant lift, operated by an attendant
- Loading position - either direction
- Interfaces with OEM interlocks
- Lift mounted lights - platform illuminated as it deploys
- Hand control with illuminated functions
- Locking mechanical Inboard Barrier (IB), powder coated yellow for safety and high visibility, prevents movement if occupied
- Pump design prevents platform folding when occupied, quiet operation and low current draw
- Durable redesigned baseplate reduces lift weight and allows for quicker and easier service of hose/wiring
- Easily installed, step-by-step installation instructions, no peripheral hardware required
- Visual and audible warning provides notification of unsafe conditions
- Spring-loaded outer barrier that will transition to the fully up position as the platform leaves the ground, has durable rubber nose guard and is powder coated yellow for safety and high visibility
- Parallel arms lift with hydraulic cylinders
- Side or rear door application
- Several platform widths and lengths
- Dual handrails for security and convenience
- Bridging feature permits the wheelchair user to board the lift from sidewalks or inclines
- Floor to ground travel is 48”
- Lifting capacity is 1000 lbs
- Integrated back-up pump
- Equipped with an adjustable anti-rattle feature to avoid unpleasant noise in the vehicle during transit
- Durable high-gloss powder coated finish
- Lift-Tite system stows the lift platform securely while the vehicle is in transit
- Pump module with removable cover offers easy access to all components

NCL1000-2 Century Series™ Models

NCL1000IB3351-2
NHTSA Compliant **Usable Platform: 33" x 51"**

NCL1000IB3451-2
NHTSA Compliant **Usable Platform: 34" x 51"**

NCL1000IB3451HB-2
NHTSA Compliant **Usable Platform: 34" x 51"**

NCL1000IB3454-2
NHTSA Compliant **Usable Platform: 34" x 54"**

NCL1000IB3454HB-2
NHTSA Compliant **Usable Platform: 34" x 54"**

NCL1000IB3751HB-2
NHTSA Compliant **Usable Platform: 37" x 51"**

NCL1000IB3754HB-2
NHTSA Compliant **Usable Platform: 37" x 54"**

For a front-mounted pump assembly, add "F" to the model number when ordering (example: NCL1000FIB3351-2).

IB = Inboard Barrier HB = Handrail Belt

General Function: Electrohydraulic, power up/gravity down operation

Operation: Hydraulic pump with two lifting cylinders

Control: hand-held control box

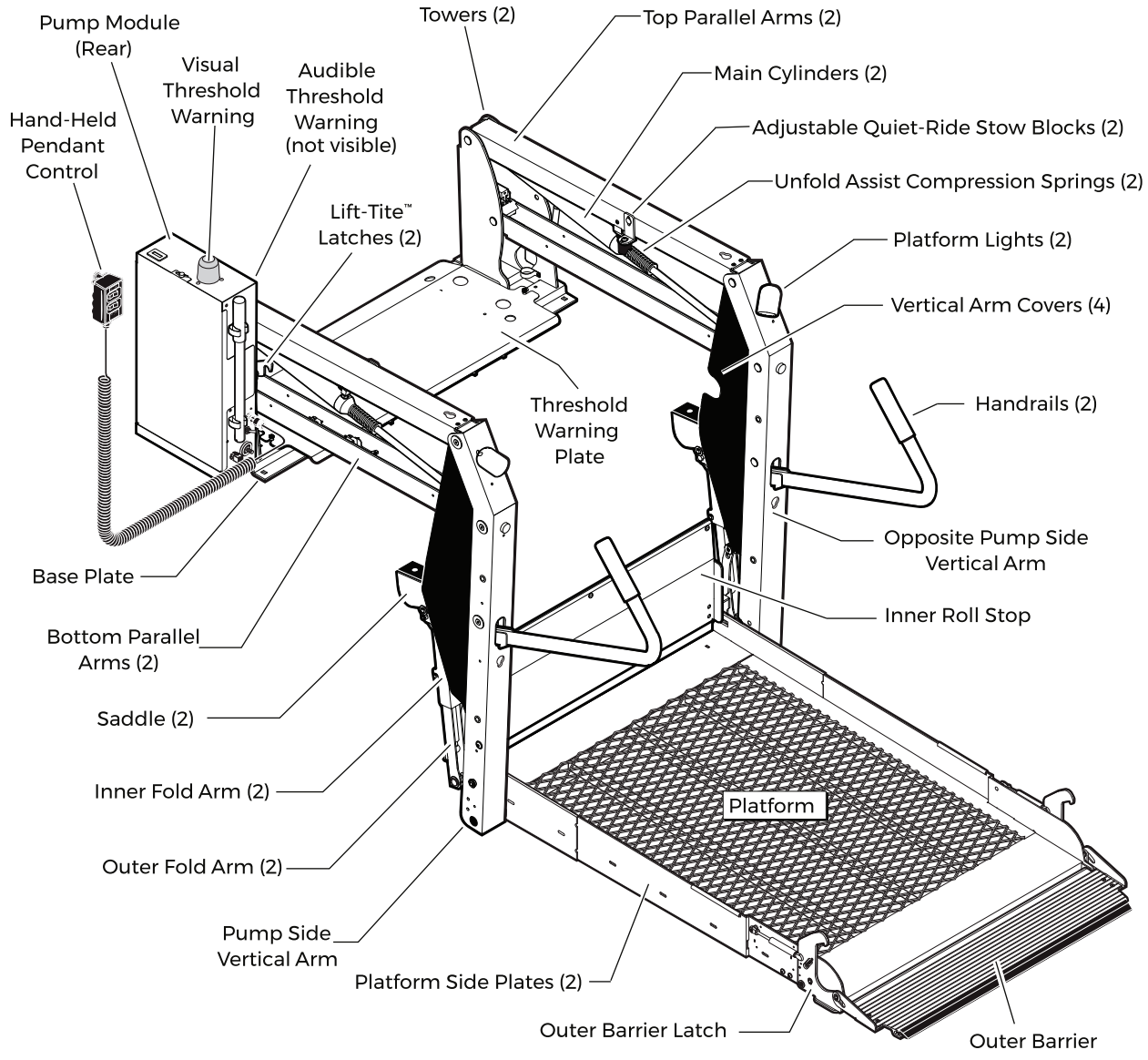
Hydraulic: Pressure Max. 2,495 psi, Fluid is Univis HVI 26, oil reservoir is .33 gal

Construction: Steel structure with powder coat finish

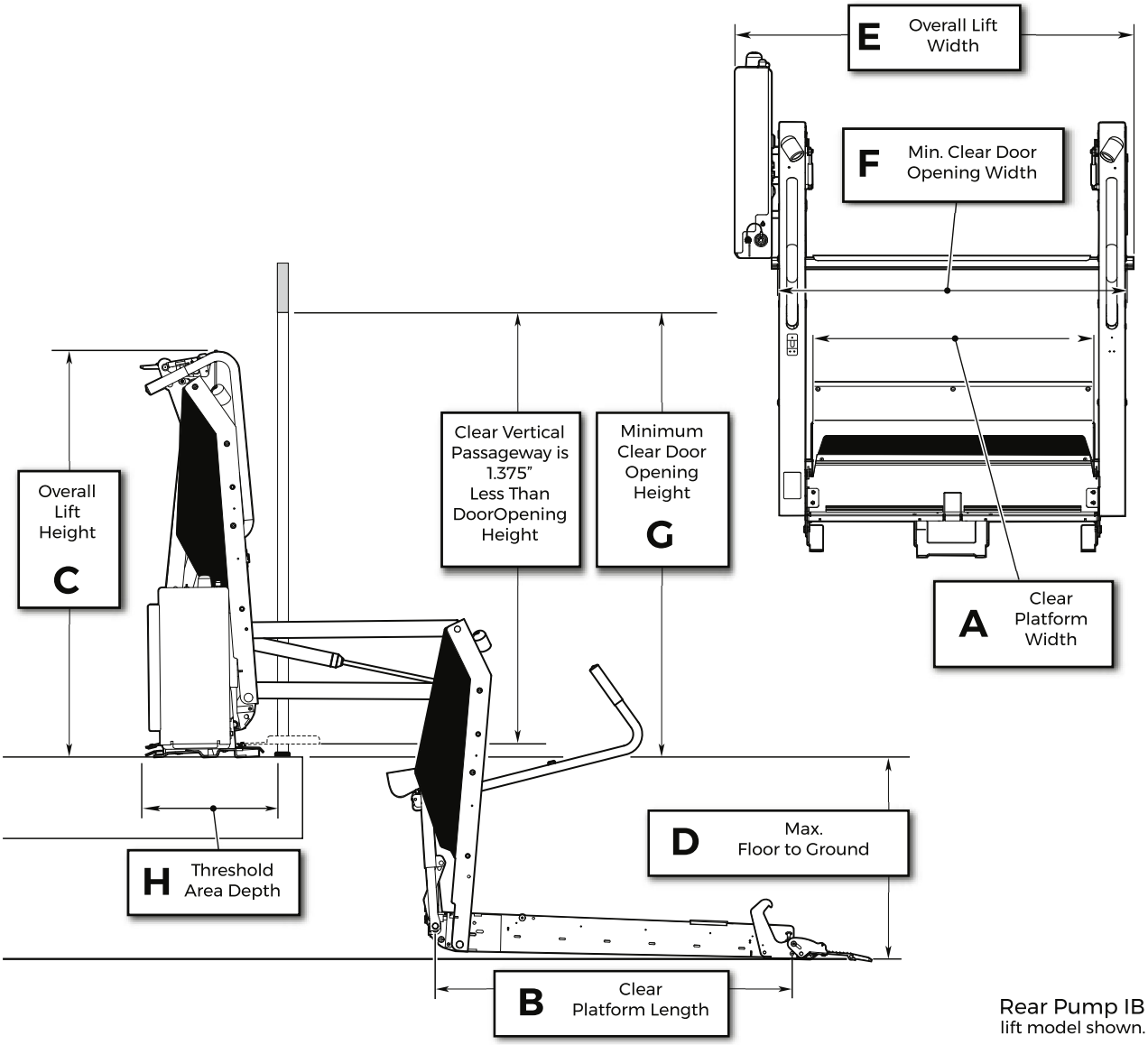
Operating Temperature: 0°F to 140°F

Power Supply: 12VDC

Current Consumption: Max. 70A (12V)



NCL1000-2 Century Series™ Dimensions



Rear Pump IB
lift model shown.

All dimensions are for reference only.

NCL1000-2 Century Series™			A	B	C	D	E	F	G	H
Lift Model Number	Lift Weight lbs	Lifting Capacity lbs	Clear Platform Width	Clear Platform Length	Overall Lift Height	Max. Floor to Ground	Overall Lift Width	Min. Clear Door Opening Width	Min. Clear Door Opening Height	Threshold Area Depth
NCL1000IB3351-2	358	1000	33"	51"	56.25"	48"	46"	42"	57.375"	18"
NCL1000IB3451-2	358	1000	34"	51"	56.25"	48"	47"	43"	57.375"	18"
NCL1000IB3451HB-2	358	1000	34"	51"	61.25"	48"	47"	43"	62.375"	18"
NCL1000IB3454-2	358	1000	34"	54"	59.25"	48"	47"	43"	60.375"	18"
NCL1000IB3454HB-2	358	1000	34"	54"	66.25"	48"	47"	43"	67.375"	18"
NCL1000IB3751HB-2	380	1000	37"	51"	61.25"	48"	50"	46"	62.375"	18"
NCL1000IB3754HB-2	385	1000	37"	54"	66.25"	48"	50"	46"	67.375"	18"

NCL1000-2 Century Series™ NHTSA Install Kits

	Std. Length Rear Door	Ext. Length Rear Door
Ford Transit (2015)	400774KS	400773KS
Ford Transit Template (2015)	400778KS	400778KS
Sprinter (2014 & up)		401174KS
Sprinter Template (2014 & up)		401177KS

Van Mounting Kits contain floor reinforcements for 403/404 compliance.

NCL1000-2 Century Series™ Accessories



◀ **31579KS**
Handrail Restraint Retractable - for 51” Platforms

35533KS
Handrail Restraint Retractable - for 54” Platforms

35331KS
Handrail Restraint Non-Retractable



◀ **35295K**
Upper Tower Support Kit



◀ **33659KS**
Replacement Hand-Held Control



◀ **402606KS Padding Kit**

404168 Full Cover - DPA Lift

NCL1000-2 Century Series™ Specifications

COMMERCIAL WHEELCHAIR LIFT SPECIFICATIONS - IN COMPLIANCE WITH United States Department of Transportation Rules and Regulations 49CFR, Part 38. FROM THE AMERICANS WITH DISABILITIES ACT OF 1990 and NHTSA Rule 403 (2004) "Provided to make your spec writing easier."

The wheelchair lift is compliant with Federal Motor Vehicle Safety Standard 403 for platform lift systems for motor vehicles. The lift shall have been tested to a minimum static load of 2400#. The lift shall have 1000# rated lifting capacity. The base plate shall be a corrugated designed member to provide rigidity to minimize lift deflection when placed under load.

The power supply shall be a 12 volt electro-hydraulic system operating two single-acting cylinders. The hydraulic power pack system shall be of modular design allowing for easy removal and field replacement, if needed. The operation of the unit shall provide a smooth, jerk-free ride in both up and down directions. The power operation of the hydraulic cylinders shall be of a pull-type design for smooth lifting operation and improved synchronous arm movement. The pivot pins in the trunnion (knuckle) of the pivot arms shall be of stationary design. The hydraulic system shall be regulated by two separate relief valves, one of which is designed to prevent accidental stowing when occupied.

The hand control for lift operation shall be of a one-hand operation design made of durable plastic. The hand control will provide user with illuminated functions. The hand control cable shall be coiled with quick-change connections for ease of maintenance or field change.

A manual back-up system shall be provided to ensure operation of the lift in case of electrical failure. The backup system shall provide a reliable means of manually raising and lowering the lift while occupied. The back-up system shall fold and unfold the platform. The back-up pump shall be integrated with the hydraulic power pack system such that no hydraulic lines or fittings are required.

The platform shall be of steel construction and the surface shall be of see-through grating allowing for improved visibility and safer use in inclement weather. The platform shall have a minimum usable wheelchair passageway width of 33 inches and a minimum usable length of 51 inches requiring a 57 inch vertical clear door opening. The sides of the platform shall be a minimum of 2.5 inches high.

The platform shall be automatically folded and unfolded and fully automatic in operation. The platform shall allow both inboard and outboard facing of wheelchair and mobility aid users. The platform entrance ramp shall be extruded aluminum for weight savings, have a rubber leading edge and raised ribs for traction. The outer barrier must not raise if occupied with 25 lbs. The outer barrier shall be the sole outboard wheelchair retention device and shall be interlocked and comply with the FMVSS 403 requirements. Dual handrails shall be provided to add security and convenience. These handrails shall be 1.25 inch minimum diameter, minimum 30 inches in height, minimum of 8 inches in length, and withstand a 100# force in any direction (including vertical) without permanent deformation. The lift must have a fail safe system to prevent stowing if solenoid welds. The platform shall have "built in" lighting to meet 404 platform lighting requirements with no auxiliary lighting.

All lift components shall be finished with a baked-on powder coating, which will meet a salt spray test of 1000 hours, to provide corrosion resistance and a long service life. BraunAbility Century Series to include but not limited to the following model numbers:

- NCL1000IB3351-2, NCL1000FIB3351-2, NCL1000IB3451-2, NCL1000FIB3451-2, NCL1000IB3451HB-2, NCL1000FIB3451HB-2, NCL1000IB3454-2, NCL1000FIB3454-2, NCL1000IB3454HB-2, NCL1000FIB3454HB-2, NCL1000IB3751HB-2, NCL1000FIB3751HB-2, NCL1000IB3754HB-2, NCL1000FIB3754HB-2

BraunAbility braunability.com 800.THE.LIFT ISO 9001:2015

631 West 11th Street, Winamac, IN 46996, USA

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Contract:	Fort Bend
Agency:	
VIN:	0
Date:	3/10/2022

BUY AMERICA DOMESTIC Certification Statement
Certificate Of Compliance With Section 165(b)(3)

MobilityTRANS herby certifies that it complies with the requirements of section 165(b)(3), of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 CFR 661.11

Final assembly of completed vehicles is done at 16233 inkster Rd, Livonia, MI 48150

Component/Manufacturer		Manufacturing Location	Domestic Content %
Chassis	**Ford Motor Company**	**U.S.**	**68.05%**
75.93% U.S. Content			
Floor Covering	**GerFlor, Inc**	**Foreign**	**0.00%**
Foreign			
Rear Passenger Seating	**Feedman Seating**	**U.S.**	**5.28%**
Greater Than 98%			
Wheelchair Lift	**Braun Ability**	**U.S.**	**5.33%**
73% U.S. Content			
Wheelchair Tiedowns	**Q'Straint**	**U.S.**	**1.07%**
Greater Than 70%			
Vehicle Interface Module	**LGS Group, Inc**	**U.S.**	**0.22%**
100% U.S. Content			
Final Assembley	**MobilityTrans**	**U.S.**	**1.99%**
Final Assemblt In Livonia, MI			
Misc		**Unaccounted**	**0.00%**
Domestic Content Not Evaluated			
		Net Domestic Content %	**81.94%**

President,
MobilityTRANS

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet



Energy-Saving, Moisture Resistant XPS Insulation

ASTM C578 Type X, 15 psi minimum

Description

Owens Corning™ FOAMULAR® 150 extruded polystyrene (XPS) insulation is a closed cell, moisture-resistant rigid foam board well suited to meet the need for a wide variety of building applications.[3] FOAMULAR® 150 XPS insulation is ideal for many residential and commercial construction applications such as wall furring, perimeter/foundation, cavity wall, pre-cast concrete, crawl spaces, sheathing and other applications[3]. FOAMULAR® 150 XPS insulation is classified as a Type X product when tested in accordance with ASTM C578 and provides a long-term thermal performance of R-5 per inch.

Like all FOAMULAR® XPS products, FOAMULAR® 150 XPS insulation is made with Owens Corning's patented Hydrovac® process technology under strict quality control measures, which makes it highly resistant to moisture and permits the product to retain it's high R-value year after year even after prolonged exposure to moisture, and freeze/thaw cycling.

Key Features

- Excellent long-term stable insulating performance at R-5[1] per inch
- Exceptional moisture resistance, long-term durability
- Limited lifetime warranty[2]—maintains 90% of R-value and covers all ASTM C578 properties
- The only XPS foam to be GREENGUARD Children & Schools Certified℠
- The only XPS foam with certified recycled content—certified by Scientific Certification Systems (SCS) to contain a minimum 20% recycled content
- Will not corrode, rot or support mold growth
- Zero ozone depletion potential with 70% less global warming potential than our previous formula
- Reusable
- Lightweight, durable rigid foam panels are easy to handle and install
- Easy to saw, cut or score
- Versatile applications: sheathing, foundation walls, masonry cavity walls[3]
- Not for use in roofing. For roofing applications, use FOAMULAR® THERMAPINK® Extruded Polystyrene Insulation

Product type

- Minimum compressive strength of 15 psi
- Wide selection of sizes and thicknesses
- Available in square, tongue and groove or scored square edge
- Compliant with building codes and standards

Product Applications

High-performance FOAMULAR® 150 XPS insulation:

- Retards the transmission of water vapor and moisture in masonry walls
- Provides continuous insulation over steel stud framing, in insulated concrete sandwich panel walls, or in masonry unit cavity walls, or when used with non-penetrating, surface mounted furring systems over masonry or concrete walls
- Insulates and retains its properties in below grade perimeter and foundation applications, to complement the insulating sheathing envelope around the building framing
- FOAMULAR® 150 XPS insulation is ideal for below grade applications. Extruded polystyrene (XPS) is resistant to degradation from the components of common soils and will retain its insulating performance characteristics even after prolonged exposure to moisture.

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

- Provides a weather resistant barrier (when joints are sealed) to enhance the building resistance to air and moisture penetration.

Technical Information

This product is combustible. A protective barrier or thermal barrier is required as specified in the appropriate building code. For additional information, consult MSDS or contact Owens Corning World Headquarters at 1-800-GET-PINK®.

All construction should be evaluated for the necessity to provide vapor retarders. See current ASHRAE Handbook of Fundamentals.

FOAMULAR® 150 XPS Insulation is a non-structural material and must be installed on framing which is independently braced and structurally adequate to meet required construction and service loading conditions.

FOAMULAR® insulation can be exposed to the exterior during normal construction cycles. During that time some fading of color may begin due to UV exposure, and, if exposed for extended periods of time, some degradation or "dusting" of the polystyrene surface may begin. It is best if the product is covered within 60 days to minimize degradation. Once covered, the deterioration stops, and damage is limited to the thin top surface layers of cells. Cells below are generally unharmed and still useful insulation.

Typical Physical Properties[1]

FOAMULAR® 150 Extruded Polystyrene Insulation

Property	Test Method[2]	Value
Thermal Resistance[3], R-Value (180 day) minimum, hr•ft²•°F/Btu (RSI, °C•m²/W) @ 75°F (24°C) mean temperature	ASTM C518	
1" Thickness		5.0 (0.88)
1½" Thickness		7.5 (1.32
2" Thickness		10 (1.76)
2½" Thickness		12.5 (2.20)
3" Thickness		15 (2.64)
@ 40°F (4.4°C) mean temperature		
1" Thickness		5.4 (0.95)
1½" Thickness		8.1 (1.43)
2" Thickness		10.8 (1.90)
2½" Thickness		13.5 (2.38)
3" Thickness		16.2 (2.85)
Long Term Thermal Resistance, LTTR-Value[3,] minimum hr•ft²•°F/Btu (RSI, °C•m²/W) @ 75°F (24°C) mean temperature	CAN/ULC S770-03	
1" Thickness		5.0 (0.88)
1½" Thickness		7.8 (1.37)
2" Thickness		10.6 (1.87)
2½" Thickness		13.4 (2.36)
3" Thickness		16.2 (2.85)
Compressive Strength[4], minimum psi (kPa)	ASTM D1621	15 (103)
Flexural Strength[5], minimum psi (kPa)	ASTM C203	60 (414)
Water Absorption[6], maximum % by volume	ASTM C272	0.10
Water Vapor Permeance[7], maximum perm (ng/Pa•s•m²)	ASTM E96	1.5 (86)
Dimensional Stability, maximum % linear change	ASTM D2126	2.0
Flame Spread[8, 9]	ASTM E84	5
Smoke Developed[8, 9, 10]	ASTM E84	45-175
Oxygen Index[8], minimum % by volume	ASTM D2863	24
Service Temperature, maximum °F (°C)	—	165 (74)
Linear Coefficient of Thermal Expansion, in/in/°F (m/m/°C)	ASTM E228	3.5×10^{-5} (6.3×10^{-5})

1. Properties shown are representative values for 1" thick material, unless otherwise specified.
2. Modified as required to meet ASTM C578
3. R means the resistance to heat flow; the higher the value, the greater the insulation power. This insulation must be installed properly to get the marked R-value. Follow the manufacturer's instructions carefully. If a manufacturer's fact sheet is not provided with the material shipment, request this and review it carefully. R-values vary depending on many factors including the mean temperature at which the test is conducted, and the age of the sample at the time of testing. Because rigid foam plastic insulation products are not all aged in accordance with the same standards, it is useful to publish comparison R-value data. The R-value for FOAMULAR® XPS insulation is provided from testing at two mean temperatures, 40°F and 75°F, and from two aging (conditioning) techniques, 180 day real-time aged (as mandated by ASTM C578) and a method of accelerated aging sometimes called "Long Term Thermal Resistance" (LTTR) per CAN/ULC S770-03. The R-value at 180 day real-time age and 75°F mean temperature is commonly used to compare products and is the value printed on the product.
4. Values at yield or 10% deflection, whichever occurs first.
5. Value at yield or 5%, whichever occurs first.
6. Data ranges from 0.00 to value shown due to the level of precision of the test method.
7. Water vapor permeance decreases as thickness increases.
8. These laboratory tests are not intended to describe the hazards presented by this material under actual fire conditions.
9. Data from Underwriters Laboratories Inc.® classified. See Classification Certificate U-197.
10. ASTM E84 is thickness-dependent, therefore a range of values is given.

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

Product and Packaging Data
FOAMULAR® 150 Extruded Polystyrene Insulation

Material	Packaging
Extruded polystyrene closed cell foam, ASTM C578 Type X, 15 psi minimum	Shipped in poly-wrapped units with individually wrapped or banded bundles.

Thickness (in)	Product Dimensions Thickness (in) x Width (in) x Length (in)	Pallet (Unit) Dimensions (typical) Width (ft) x Length (ft) x Height (ft)	Square feet per Pallet	Board feet per Pallet	Bundles per Pallet	Pieces per Bundle	Pieces per Pallet	Edges
1	1 x 24 x 96	4 x 8 x 8	3,072	3,072	8	24	192	Square Edge, Scored Square Edge, Tongue & Groove
	1 x 24 x 96	4 x 8 x 8	3,072	3,072	8	24	192	
	1 x 48 x 96	4 x 8 x 8	3,072	3,072	8	12	96	
	1 x 48 x 96 (Half unit)	4 x 8 x 4	1,536	1,536	4	12	48	
	1 x 48 x 108	4 x 9 x 8	3,456	3,456	8	12	96	
1½	1.5 x 24 x 96	4 x 8 x 8	2,048	3,072	8	16	128	
	1.5 x 48 x 96	4 x 8 x 8	2,048	3,072	8	8	64	
2	2 x 24 x 96	4 x 8 x 8	1,536	3,072	8	12	96	
	2 x 48 x 96	4 x 8 x 8	1,536	3,072	8	6	48	
2½	2.5 x 48 x 96	4 x 8 x 8	1,152	2,830	4	9	36	
3	3 x 24 x 96	4 x 8 x 8	1,024	3,072	8	8	64	
	3 x 48 x 96	4 x 8 x 8	1,024	3,072	8	4	32	

1. Available lengths and edge configurations vary by thickness. See www.foamular.com for current offerings. Other sizes may be available upon request. Consult your local Owens Corning representative for availability.

Standards, Codes Compliance

- Meets ASTM C578 Type X
- UL Classified. A copy of UL Classification Certificate U-197 is available at www.foamular.com
- See ICC-ES ESR-1061 at www.icc-es.org
- ASTM E119 Fire Resistance Rated Wall Assemblies. See www.foamular.com for details.
- Meets California Quality Standards; HUD UM #71A
- Compliance verification by RADCO (AA-650)

Certifications and Sustainable Features of FOAMULAR® XPS Insulation

- FOAMULAR® XPS insulation is reusable
- FOAMULAR® XPS insulation is made with a zero ozone depletion formula
- Certified by Scientific Certification Systems to contain a minimum of 20% pre-consumer recycled polystyrene
- Certified to meet indoor air quality standards under the stringent GREENGUARD Indoor Air Quality Certification Program℠, and the GREENGUARD Children & Schools Certification Program℠
- Qualified as an ENERGY STAR® product, under the U.S. Environmental Protection Agency and the U.S. Department of Energy
- Approved under the National Association of Home Builders (NAHB) Research Center Green Seal of Approval
- Utilizing FOAMULAR® XPS insulation can help builders achieve green building certifications including the Environmental Protection Agency's ENERGY STAR®, the National Association of Home Builders' National Green Building certification, and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) certification
- FOAMULAR® XPS insulation may qualify for The Buy American provision of the American Recovery and Reinvestment Act (ARRA)

FOAMULAR® 150
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

Environmental and Sustainability

Owens Corning is a worldwide leader in building material systems, insulation and composite solutions, delivering a broad range of high-quality products and services. Owens Corning is committed to driving sustainability by delivering solutions, transforming markets and enhancing lives. More information can be found at www.sustainability.owenscorning.com.

Warranty

FOAMULAR® XPS Insulation limited lifetime warranty maintains 90% of its R-value for the lifetime of the building and covers all ASTM C578 properties. See actual warranty for complete details, limitations and requirements at www.foamular.com or www.owenscorningcommercial.com.

Notes

1. R means the resistance to heat flow; the higher the R-value, the greater the insulating power.
2. See actual warranty for complete details, limitations and requirements.
3. Not for use in roofing. For roofing applications, use FOAMULAR® THERMAPINK® Extruded Polystyrene Insulation.

All products described here may not be available in all geographic markets. Consult your local sales office representative for more information.

For more information on the Owens Corning family of building products, contact your Owens Corning dealer, call 1-800-GET-PINK®, or access our web sites: www.foamular.com and www.owenscorning.com.

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