



EXHIBIT A-1 – BIDDER’S CERTIFICATION

Competitive Solicitation:	No. 07621 – ADA Compliant Vans, Minivans, & Specialty Vehicles (i.e., ADA Walk-In Step Vans)		
Bidder:	Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles Type/print full legal name of Bidder		
Bidder’s Address:	11601 Cyrus Way, Suite 101, Mukilteo, WA 98275 Type/print Bidder’s Address		
Bidder Organization Type: Check appropriate box	Corporation:	☒ Domestic	☐ Foreign
	Limited Liability Company (LLC):	☐ Domestic	☐ Foreign
	Partnership:	☐ Domestic	☐ Foreign
	Sole Proprietorship:	☐	
	* Note: A sole proprietorship is an unincorporated business owned and run by an individual with no distinction between the business and the owner. It is not a legal entity. It simply refers to a person who owns the business and is personally responsible for its debts and who pays personal income taxes on profits earned from the business. If you are a bidder who operates a business on your own, you automatically are a sole proprietor unless you have adopted a business structure (e.g., corporation, LLC, partnership).		
State of Formation for Corp./LLC/Partnership :	Indiana Type/print the state where the corporation, LLC, or partnership is formed – e.g., ‘Washington’ if domestic and the name of the state if ‘Foreign’ (i.e., not Washington)		
Doing Business Under Another Name: Check appropriate box	State whether Bidder has been doing business under another name during the past five years: ☐ Bidder has NOT done business under another name ☒ Bidder HAS done business under another name If Bidder HAS done business under another name, provide the name(s) and addresses: Name: Model 1 Commercial Vehicles, Inc. Address: 9225 Priority Way, Indianapolis, IN 46240		

Bidder, through the duly authorized undersigned, makes this certification as a required element of submitting a responsive bid. Bidder certifies, to the best of its knowledge and belief that the following are true, complete, correct, and made in good faith:

1. UNDERSTANDING. Bidder certifies that Bidder has read, thoroughly examined, and fully understands all of the provisions in the Competitive Solicitation (including all exhibits) and the terms and conditions of the Master Contract and any amendments or clarifications to the Competitive Solicitation, and agrees to abide by the same.
2. ACCURACY. Bidder certifies that Bidder has carefully prepared and reviewed its bid and fully supports the accuracy of the same. Bidder further understands and acknowledges that Enterprise Services shall not be responsible for any errors or omission on the part of Bidder in preparing its bid. Bidder further certifies that the facts declared here are true and accurate. Bidder further understands and acknowledges that the continuing compliance with these statements and all requirements of the Competitive Solicitation are conditions precedent to the award or continuation of the resulting Master Contract.
3. NO COLLUSION, ANTI-COMPETITIVE PRACTICES, OR SHARING BID INFORMATION. Bidder certifies that Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this Competitive Solicitation. Bidder further certifies that Bidder's bid prices have been arrived at independently, without engaging in collusion, bid rigging, or any other illegal activity, and without for the purpose of restricting competition any consultation, communication, or agreement with any other bidder or competitor relating to (a) those prices, (b) the intention to submit a bid, or (c) the methods or factors used to calculate the prices offered. Bidder further certifies that Bidder has not been and will not knowingly disclose its bid prices, directly or indirectly, to any other bidder or competitor before award of a Master Contract, unless otherwise required by law. Bidder further certifies that Bidder has made no attempt and shall not make any attempt to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition. Bidder, however, freely may join with other persons or organizations for the purpose of presenting a joint bid. Whether done directly or indirectly, communicating bid information with other bidders, collusion, or anti-competitive actions among bidders are prohibited. If there is evidence of such communication, collusion, or anti-competitive activities among bidders, Enterprise Services reserves the right to disqualify such bidders.
4. FIRM OFFER. Bidder certifies that its bid pertaining to the above-referenced Competitive Solicitation is a firm offer which cannot be withdrawn for a time period of ninety (90) days from and after the bid due date specified in the Competitive Solicitation. Enterprise Services may accept such bid, with or without further negotiation, at any time within such period. In the event of a protest, Bidder's bid shall remain valid for such time period or until the protest and any related court action is resolved, whichever is later.
5. CONFLICT OF INTEREST. Bidder certifies that, in preparing its bid, Bidder has not been assisted by any current or former employee of the State of Washington whose duties relate (or did relate) to this Competitive Solicitation or prospective Master Contract and who was assisting in other than the employee's official, public capacity. Bidder further certifies that no such current or former public employee nor any member of such person's immediate family have any financial interest in the outcome of Bidder's bid.
6. NO REIMBURSEMENT. Bidder certifies that Bidder understands that the State of Washington will not reimburse Bidder for any costs incurred in the preparation of Bidder's bid. All bids become the property of the State of Washington, and Bidder claims no proprietary right to the ideas, writings, items, or samples unless so stated in the bid.

7. PERFORMANCE. Bidder certifies that Bidder understands that its submittal of a bid and execution of this Bidder's Certification certifies Bidder's willingness to comply with the Master Contract, if awarded such. By submitting this bid, Bidder hereby offers to furnish the goods and/or services solicited pursuant to this Competitive Solicitation in compliance with all terms, conditions, and performance requirements contained in this Competitive Solicitation and the resulting Master Contract or, if applicable, as detailed on a Contract Issues List, if permitted, in this Competitive Solicitation.
8. INSURANCE. Bidder certifies as follows (*must check one*):
- ☒ *BIDDER HAS REQUIRED INSURANCE.* Bidder has attached a current, valid Certificate of Insurance for each and all of the required insurance coverages as specified in the Master Contract (note: Bidder must attach the Insurance Certificate).
- OR
- ☐ *BIDDER WILL OBTAIN REQUIRED INSURANCE.* Bidder does not have a current, valid Certificate of Insurance for each and all of the required insurance coverages as specified in the Master Contract but, if designated as the Apparent Successful Bidder, Bidder will provide such a Certificate of Insurance, without exception of any kind, to Enterprise Services within twenty-four (24) hours of such designation or notification by Enterprise Services or be deemed a nonresponsive bid.
- OR
- ☐ *BIDDER DOES NOT HAVE REQUIRED INSURANCE.* As detailed on the attached explanation (Bidder to provide), Bidder does not have a current, valid Certificate of Insurance for each and all of the required insurance coverages as specified in the Master Contract and, if designated as the Apparent Successful Bidder would not be able to provide such a Certificate of Insurance to Enterprise Services within twenty-four (24) hours of such designation.
9. DEBARMENT. Bidder certifies as follows (*must check one*):
- ☒ *NO DEBARMENT.* Bidder and/or its principals are not presently nor has ever been debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from contracting with any federal, state, or local governmental entity within the United States.
- OR
- ☐ *DEBARRED.* As detailed on the attached explanation (Bidder to provide), Bidder and/or its principals presently are debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from contracting with a federal, state, or local governmental entity within the United States.
10. CRIMINAL OFFENSE. Bidder (including Bidder's officers) certifies as follows (*must check one*):
- ☒ *NO CRIMINAL OFFENSE.* Bidder has not, within the three (3) year period preceding the date of this Competitive Solicitation, been convicted or had a civil judgment rendered against Bidder for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a governmental contract; violation of any federal or state antitrust statute; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property. Bidder further certifies that it is not presently indicted or otherwise criminally or civilly charged by a governmental entity

with commission of any of the offenses enumerated in this paragraph.

OR

- ☐ *CRIMINAL OFFENSE.* As detailed on the attached explanation (Bidder to provide), within the three (3) year period preceding the date of this Competitive Solicitation, Bidder has been convicted or had a civil judgment rendered against Bidder for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a governmental contract; violation of any federal or state antitrust statute; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

11. WAGE THEFT PREVENTION. Bidder certifies as follows (*must check one*):

- ☒ *NO WAGE VIOLATIONS.* Bidder has NOT been determined by a final and binding citation and notice of assessment issued by the Washington Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in [RCW 49.48.082](#), any provision of RCW chapters [49.46](#), [49.48](#), or [49.52](#) within three (3) years prior to the date of the above-referenced Competitive Solicitation date.

OR

- ☐ *VIOLATIONS OF WAGE LAWS.* Bidder has been determined by a final and binding citation and notice of assessment issued by the Washington Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in [RCW 49.48.082](#), a provision of RCW chapters [49.46](#), [49.48](#), or [49.52](#) within three (3) years prior to the date of the above-referenced Competitive Solicitation date.

12. CIVIL RIGHTS. Bidder certifies as follows (*must check one*):

- ☒ *COMPLIANCE WITH CIVIL RIGHTS REQUIREMENTS.* Bidder complies with all applicable requirements regarding civil rights. Such requirements prohibit discrimination against individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin.

OR

- ☐ *NON-COMPLIANCE WITH CIVIL RIGHTS REQUIREMENTS.* Bidder does not comply with all applicable requirements regarding civil rights.

13. WORKERS' RIGHTS ([EXECUTIVE ORDER 18-03](#)). Bidder certifies as follows (*must check one*):

- ☒ *NO MANDATORY INDIVIDUAL ARBITRATION CLAUSES AND CLASS OR COLLECTIVE ACTION WAIVERS FOR EMPLOYEES.* Bidder does NOT require its employees, as a condition of employment, to sign or agree to mandatory individual arbitration clauses or class or collective action waivers.

OR

- ☐ *MANDATORY INDIVIDUAL ARBITRATION CLAUSES AND CLASS OR COLLECTIVE ACTION WAIVERS FOR EMPLOYEES.* Bidder requires its employees, as a condition of employment, to sign or agree to mandatory individual arbitration clauses or class or collective action waivers.

14. TERMINATION FOR DEFAULT OR CAUSE. Bidder certifies as follows (*must check one*):

- ☒ *NO TERMINATION FOR DEFAULT OR CAUSE.* Bidder has not, within the three (3) year period preceding the date of this Competitive Solicitation, had one (1) or more federal, state, or local governmental contracts terminated for cause or default.

OR

- ☐ *TERMINATION FOR DEFAULT OR CAUSE.* As detailed on the attached explanation (Bidder to provide), within the three (3) year period preceding the date of this Competitive Solicitation, Bidder has had one (1) or more federal, state, or local governmental contracts terminated for cause or default.

15. TAXES. Bidder certifies as follows (*must check one*):

- ☒ *TAXES PAID.* Except as validly contested, Bidder is not delinquent and has paid or has arranged for payment of all taxes due to the State of Washington and has filed all required returns and reports as applicable.

OR

- ☐ *DELINQUENT TAXES.* As detailed on the attached explanation (Bidder to provide), Bidder has not paid or arranged for payment of all taxes due to the State of Washington and/or has not timely filed all required returns and reports as applicable.

16. FINANCIALLY SOLVENT. Bidder certifies as follows (*must check one*):

- ☒ *FINANCIALLY SOLVENT.* Bidder is financially stable and solvent, has adequate cash reserves to meet all financial obligations, has not commenced bankruptcy proceedings voluntarily or otherwise, and is not subject to any judgments, liens, or encumbrances of any kind affecting title to any Goods or Services that are the subject of this Competitive Solicitation.

OR

- ☐ *NOT FINANCIALLY SOLVENT.* As detailed on the attached explanation (Bidder to provide), Bidder is not financially stable and solvent – i.e., Bidder does not have adequate cash reserves to meet all financial obligations, has commenced bankruptcy proceedings voluntarily or otherwise, or is subject to a judgment, lien, or encumbrance that affects title to the Goods or Services that are the subject of this Competitive Solicitation.

17. LAWFUL REGISTRATION. Bidder, if conducting business other than as a sole proprietorship certifies as follows (*must check one*):

- ☒ *CURRENT LAWFUL REGISTRATION.* Bidder is in good standing in the State of Washington and the jurisdiction where Bidder is organized, including having timely filed all required annual reports.

OR

- ☐ *DELINQUENT REGISTRATION.* As detailed on the attached explanation (Bidder to provide), Bidder currently is not in good standing in the State of Washington and/or the jurisdiction where Bidder is organized.

- ☐ *NOTE:* This certification applies only to bidders that are organized as separate legal entities (e.g., a corporation, partnership, limited liability company). If bidder is a sole proprietor, this certification should not be answered.

18. REGISTRATION WITH WASHINGTON SECRETARY OF STATE. Bidder certifies as follows (must check one):

- ☒ *BIDDER IS REGISTERED WITH WASHINGTON SECRETARY OF STATE.* Bidder is registered with the Washington Secretary of State, is in good standing, and has the following Unified Business Identifier (UBI) number: 603 444 653.

OR

- ☐ *BIDDER WILL REGISTER WITH WASHINGTON SECRETARY OF STATE.* Bidder is not registered with the Washington Secretary of State but, if designated as the Apparent Successful Bidder, Bidder will register with the Washington Secretary of State to obtain a UBI number and provide proof of such registration satisfactory to Enterprise Services within twenty-four (24) hours of such designation or notification by Enterprise Services or be deemed a nonresponsive bid.

OR

- ☐ *BIDDER IS NOT REGISTERED WITH WASHINGTON SECRETARY OF STATE.* Bidder is not registered with the Washington Secretary of State and Bidder declines to register with the Washington Secretary of State. *Note:* Enterprise Services requires all awarded bidders (including Washington firms and out of state firms) to be registered with the Washington Secretary of State. Bidders who are not registered will not be awarded a Contract.

NOTE: This certification applies only to bidders that are organized as separate legal entities (e.g., a corporation, partnership, limited liability company). If bidder is a sole proprietor, this certification should not be answered.

19. REGISTRATION WITH WASHINGTON STATE DEPARTMENT OF REVENUE. Bidder certifies as follows (*must check one*):

- ☒ *BIDDER IS REGISTERED WITH WASHINGTON STATE DEPARTMENT OF REVENUE.* Bidder is registered with the Washington State Department of Revenue, has a business license to do business in Washington, and has the following Unified Business Identifier (UBI) number: 603 444 653.

OR

- ☐ *BIDDER WILL REGISTER WITH WASHINGTON STATE DEPARTMENT OF REVENUE.* Bidder is not registered with the Washington State Department of Revenue but, if designated as the Apparent Successful Bidder, Bidder will register with the Washington State Department of Revenue for a business license and provide proof of such registration satisfactory to Enterprise Services within twenty-four (24) hours of such designation or notification by Enterprise Services or be deemed a nonresponsive bid.

OR

- ☐ *BIDDER IS NOT REGISTERED WITH WASHINGTON STATE DEPARTMENT OF REVENUE.* Bidder is not registered with the Washington State Department of Revenue and Bidder declines to register with the Washington State Department of Revenue. *Note:* Enterprise Services requires all awarded bidders (including Washington firms and out of state firms) to be registered with the Washington State Department of Revenue. Bidders who are not registered will not be awarded a Master Contract.

20. REGISTRATION WITH SYSTEM FOR AWARD MANAGEMENT ([SAM.GOV](https://sam.gov)). Bidder certifies as follows (*must check one*):

- ☒ *BIDDER IS REGISTERED WITH SYSTEM FOR AWARD MANAGEMENT ([SAM.GOV](https://sam.gov)).* Bidder is

registered with [SAM.gov](https://sam.gov),

OR

- ☐ *BIDDER WILL REGISTER WITH SYSTEM FOR AWARD MANAGEMENT ([SAM.gov](https://sam.gov))*. Bidder is not registered with [SAM.gov](https://sam.gov) but, if designated as the Apparent Successful Bidder, Bidder will register with the [SAM.gov](https://sam.gov) within twenty-four (24) hours of such designation or notification by Enterprise Services or be deemed a nonresponsive bid.

OR

- ☐ *BIDDER IS NOT REGISTERED WITH SYSTEM FOR AWARD MANAGEMENT ([SAM.gov](https://sam.gov))*. Bidder is not registered with [SAM.gov](https://sam.gov) and Bidder declines to register with the [SAM.gov](https://sam.gov).

Note: Enterprise Services requires all awarded bidders (including Washington firms and out of state firms) to be registered with the [SAM.gov](https://sam.gov). Bidders who are not registered will not be awarded a Master Contract.

21. SUBCONTRACTORS. Bidder certifies as follows (*must check one*):

- ☒ *NO SUBCONTRACTORS*. If awarded a Master Contract, Bidder will not utilize subcontractors to provide the goods and/or services subject to this Competitive Solicitation.

OR

- ☐ *SUBCONTRACTORS*. As detailed on the attached explanation (Bidder to provide), if awarded a Master Contract, Bidder will utilize subcontractors to provide the goods and/or services subject to this Competitive Solicitation. In such event, Bidder further certifies that, as to the State of Washington, Bidder shall retain responsibility for its subcontractors, including, without limitation, liability for any subcontractor's acts or omissions. *Note:* Bidder must provide the precise legal name (including state of organization), business address, and federal tax identification number (TIN) for each subcontractor. *Note:* If the TIN is a SSN, do not provide the SSN.

22. WASHINGTON SMALL BUSINESS. Bidder certifies as follows (*must check one*):

- ☐ *WASHINGTON SMALL BUSINESS*. Bidder is a Washington Small Business as defined in RCW 39.26.010. To qualify as a Washington Small Business, Bidder must meet three (3) requirements:

Location. Bidder's principal office/place of business must be located in and identified as being in the State of Washington. A principal office or principal place of business is a firm's headquarters where business decisions are made and the location for the firm's books and records as well as the firm's senior management personnel.

- ☐ *Size*. Bidder must be owned and operated independently from all other businesses and qualify as one of the following:

- ☐ Bidder Qualifies as a Small Business – i.e.,
- ☐ Bidder has fifty (50) or fewer employees; **or**
 - ☐ Bidder has a gross revenue of less than \$7,000,000 annually as reported on Bidder's federal income tax return or its return filed with the Washington State Department of Revenue over the previous three (3) consecutive years.

- ☐ Bidder Qualifies as a Minibusiness - i.e., Bidder has an annual gross revenue of less than \$3,000,000, but \$1,000,000 or more, as reported on Bidder's federal income tax return or its return filed with the Washington State Department of Revenue.
- ☐ Bidder Qualifies as a Microbusiness – i.e., Bidder has an annual gross revenue of less than \$1,000,000 as reported on Bidder's federal income tax return or its return filed with the Washington State Department of Revenue.
- ☐ *WEBS Certification.* Bidder must have certified its Washington Small Business status in Washington's Electronic Business Solution (WEBS).

OR

- ☒ *NOT WASHINGTON SMALL BUSINESS.* Bidder does not qualify as a Washington Small Business as set forth above.

23. CERTIFIED VETERAN-OWNED BUSINESS. Bidder certifies as follows (*must check one*):

- ☐ *CERTIFIED VETERAN-OWNED BUSINESS.* Bidder is a Certified Veteran-Owned Business under RCW 43.60A.190. To qualify as a Certified Veteran-Owned Business, Bidder must meet four (4) requirements:
 - *51% Ownership.* Bidder must be at least fifty-one percent (51%) owned and controlled by:
 - (a) A veteran as defined as every person who at the time he or she seeks certification has received a discharge with an honorable characterization or received a discharge for medical reasons with an honorable record, where applicable, and who has served in at least one of the capacities listed in RCW 41.04.007;
 - (b) A person who is in receipt of disability compensation or pension from the department of veterans affairs; or
 - (c) An active or reserve member in any branch of the armed forces of the United States, including the national guard, coast guard, and armed forces reserves.
 - *Washington Incorporation/Location.* Bidder must be either an entity that is incorporated in the state of Washington as a Washington domestic corporation or, if not incorporated, an entity whose principal place of business is located within the State of Washington.
 - *WEBS Certification.* Bidder must have certified its Veteran-Owned business status in Washington's Electronic Business Solution ([WEBS](#)).
 - *WDVA Certification.* Bidder must have provided certification documentation to the Washington Department of Veterans' Affairs (WDVA) and be certified by WDVA and listed as such on WDVA's website ([WDVA – Veteran-Owned Businesses](#)).

OR

- ☒ *NOT A CERTIFIED VETERAN-OWNED BUSINESS.* Bidder does not qualify as a Certified Veteran-Owned Business as set forth above.
24. FEDERAL MOTOR VEHICLE SAFETY STANDARDS. Bidder certifies as follows (*must check one*):
- ☒ *COMPLIANCE WITH FEDERAL MOTOR VEHICLE SAFETY STANDARDS.* Bidder complies with Federal Motor Vehicle Safety Standards (FMVSS) which are U.S. federal vehicle regulations specifying design, construction, performance, and durability requirements for motor vehicles and regulated automobile safety-related components, systems, and design features
- OR
- ☐ *NON-COMPLIANCE WITH FEDERAL MOTOR VEHICLE SAFETY STANDARDS.* Bidder does not comply with applicable Federal Motor Vehicle Safety Standards (FMVSS) which are U.S. federal vehicle regulations specifying design, construction, performance, and durability requirements for motor vehicles and regulated automobile safety-related components, systems, and design features.
25. ALTOONA TESTING CERTIFIED (IF APPLICABLE). Bidder certifies as follows (*must check one*):
- ☒ *COMPLIANCE WITH ALTOONA TESTING REQUIREMENTS.* Bidder complies with Altoona testing requirements for ADA Vans, Minivans and Specialty Vehicles.
- OR
- ☐ *NON-COMPLIANCE WITH ALTOONA TESTING REQUIREMENTS.* Bidder does not comply with Altoona testing requirements for ADA Vans, Minivans and Specialty Vehicles.
26. FTA – FTA CLAUSES FOR PURCHASERS USING FEDERAL FUNDS SUBJECT TO FTA. This Competitive Solicitation is designed to result in the award a Master Contract(s) that may be used by various eligible purchasers. Eligible purchasers who use federal funds that are subject to Federal Transit Administration requirements must receive certain certifications from the bidder/awarded contractor. Accordingly, bidder certifies as follows (*must check one*):
- ☒ *Bidder Has Reviewed the FTA Requirements.* Bidder has reviewed and understands the FTA requirements set forth on the Enterprise Services [webpage](#) pertaining to this Competitive Solicitation.
- OR
- ☐ *Bidder Has Not Reviewed the FTA Requirements.* Bidder has not reviewed the FTA requirements set forth on the Enterprise Services [webpage](#) pertaining to this Competitive Solicitation.
27. FTA – BUY AMERICA CERTIFICATION (FOR ~~STEEL OR MANUFACTURED PRODUCTS~~ **ROLLING STOCK REQUIREMENTS**). Bidder certifies as follows (*must check one*):
- ☒ *Certificate of Compliance with Buy America **Rolling Stock** Requirements.* Bidder hereby certifies that it will comply with the requirements of [49 U.S.C. § 5323\(j\)](#) ~~(1)~~ and the applicable regulations in [49 CFR Part 661](#).
- OR
- ☐ *Certificate of Non-Compliance with Buy America Requirements.* Bidder hereby certifies that it cannot comply with the requirements of [49 U.S.C. 5323\(j\)](#), but it may qualify for an

exception to the requirement pursuant to [49 U.S.C. 5323\(j\)\(2\)](#), as amended, and the applicable regulations in [49 CFR 661.7](#).

28. VEHICLE RESELLER BUSINESS LICENSE IN WASHINGTON. Bidder certifies as follows (*must check one*):

- ☒ *BIDDER IS LICENSED TO SELL VEHICLES IN THE STATE OF WASHINGTON.* Bidder is licensed to sell motor vehicles in the State of Washington and shall maintain this license for the duration of any resulting Contract, if awarded.

OR

- ☐ *BIDDER WILL BECOME LICENSED TO SELL VEHICLES IN THE STATE OF WASHINGTON.* Bidder is not currently licensed to sell motor vehicles in the State of Washington, but, if designated as an Apparent Successful Bidder, Bidder will become licensed to sell motor vehicles in the State of Washington and provide proof of such license satisfactory to Enterprise Services within twenty-four (24) hours of such designation or notification by Enterprise Services or be deemed a nonresponsive bid.

OR

- ☐ *BIDDER IS NOT LICENSED TO SELL VEHICLES IN THE STATE OF WASHINGTON.* Bidder is not licensed to sell motor vehicles in the State of Washington. *Note:* Enterprise Services requires all awarded bidders to be licensed to sell motor vehicles in the State of Washington. Bidders who are not licensed as such will not be awarded a Contract.

29. VEHICLE RESELLER BUSINESS LICENSE IN OREGON. Bidder certifies as follows (*must check one*):

- ☒ *Bidder is Licensed to Sell Vehicles in the State of Oregon.* Bidder is licensed to sell motor vehicles in the State of Oregon and shall maintain this license for the duration of any resulting Contract, if awarded.

or

- ☐ *Bidder Will Become Licensed to Sell Vehicles in the State of Oregon (TBA).* Bidder is not currently licensed to sell motor vehicles in the State of Oregon, but, if designated as an Apparent Successful Bidder, Bidder will become licensed to sell motor vehicles in the State of Washington and provide proof of such license satisfactory to Enterprise Services within twenty-four (24) hours of such designation or notification by Enterprise Services or be deemed a nonresponsive bid.

or

- ☐ *Bidder is NOT Licensed to Sell Vehicles in the State of Oregon (TBA).* Bidder is not licensed to sell motor vehicles in the State of Oregon. *Note:* Enterprise Services requires all awarded bidders to be licensed to sell motor vehicles in the State of Oregon. Bidders who are not licensed as such will not be awarded a Contract.

30. FTA – LOBBYING CERTIFICATION. Bidder certifies, to the best its knowledge and belief, that:

No federal appropriated funds have been paid or will be paid, by or on behalf of the bidder, to any person for influencing or attempting to influence an officer or employee of a federal department or agency, a member of the U.S. Congress, an officer or employee of the U.S. Congress, or an employee of a member of the U.S. 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 thereof.

If any funds other than federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, "Disclosure Form to Report Lobbying," in accordance with its instruction, as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96).

Bidder shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 USC § 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.

31. REFERENCES. Bidder certifies that the references provided to Enterprise Services have worked with Bidder and that such individuals and firms have full permission, without any additional requirement or release, to provide such references and information to Enterprise Services. Bidder hereby authorizes Enterprise Services (or its agent) to contact Bidder's references and others who may have pertinent information regarding Bidder's prior experience and ability to perform the Master Contract, if awarded. Bidder hereby authorizes such individuals and firms to provide such references and release to Enterprise Services information pertaining to the same.

Bidder further certifies that it shall provide immediate written notice to Enterprise Services if, at any time prior to a Master Contract award, Bidder learns that any of its certifications set forth herein were erroneous when submitted or have become erroneous by reason of changed circumstances.

I hereby certify, under penalty of perjury under the laws of the State of Washington, that the certifications herein are true and correct and that I am duly authorized to make these certifications on behalf of the Bidder listed herein.

BIDDER NAME: Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles

Print Name of Bidder – Print full legal entity name of the firm submitting the Bid

If Bidder is a sole proprietor, print the full legal name of the individual who is the Bidder submitting the Bid

By: Nick Corley
Signature of Bidder's authorized person

Nick Corley
Print Name of person making certifications for Bidder

Title: Transit Bid Manager
Title of person signing certificate

Place: College Park, GA
Print city and state where signed

Date: 8/31/23

Return this Bidder's Certification to Procurement Coordinator at:

DESContractsTeamMaple@des.wa.gov



EXHIBIT A-2 – BIDDER’S PROFILE

Competitive Solicitation:	No. 07621 – ADA Compliant Vans, Minivans, & Specialty Vehicles (i.e., ADA Walk-In Step Vans)
Bidder is Submitting a Bid for the following Sub-categories or Categories	☒ Category 1- ADA Vans (6,000 -14,000 GVWR) ADA Van – Rear & Side Entry, Subcategories: ☒ Electric, Side Entry ☒ Electric, Rear Entry ☐ Hybrid/Plug-In Hybrid, Side Entry ☐ Hybrid/Plug-In Hybrid, Rear Entry ☐ Diesel, Side Entry ☐ Diesel, Rear Entry ☒ Gas, Side Entry ☒ Gas, Rear Entry ☒ Category 2- ADA Minivans Side/Rear Entry 6,000 -14,000 GVWR, Subcategories: ☐ Electric, Side Entry ☐ Electric, Rear Entry ☐ Hybrid/Plug-In Hybrid, Side Entry ☒ Hybrid/Plug-In Hybrid, Rear Entry ☐ Diesel, Side Entry ☐ Diesel, Rear Entry ☒ Gas, Side Entry ☒ Gas, Rear Entry ☒ Category 3- ADA Specialty Vehicles 10,000-16,000 GVWR, Subcategories: ☐ Electric, Side Entry ☐ Electric, Rear Entry ☐ Hybrid/Plug-In Hybrid, Side Entry ☐ Hybrid/Plug-In Hybrid, Rear Entry ☐ Diesel, Side Entry ☐ Diesel, Rear Entry ☒ Gas, Side Entry ☐ Gas, Rear Entry
Bidder:	<u>Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles</u> Type/print full legal name of Bidder

BIDDER INFORMATION	
Legal name of Bidder: Address of Bidder: <i>Note:</i> This information must match the information from Bidder's Business License.	<u>Creative Bus Sales, Inc. dba Model 1</u> <u>Commercial Vehicles</u> Business Name <u>11601 Cyrus Way, Suite 101</u> Address <u>Mukilteo, WA 98275</u> City, State, Zip Code
Bidder's Washington State Department of Revenue Registration Number/Unified Business Identifier (UBI) Number: <i>Note:</i> A nine digit UBI number is assigned to each registered businesses in Washington.	<u>603-444-653</u>
Taxpayer Identification No. (TIN): <i>Note:</i> Your TIN will be either a number issued by the IRS (e.g., Employer Identification Number, Federal Tax Identification Number) or a number issued by the Social Security Administration (i.e., your Social Security Number). Do Not provide a Social Security Number.	_____
Is your firm certified as a minority or woman owned business with the Washington State Office of Minority & Women's Business Enterprises (OMWBE)?	Yes ☐ No ☒ If yes, provide Bidder's MWBE certification no.: _____
Is your firm a self-certified Washington State Small Business? <i>Note:</i> See Exhibit A-1 – Bidder's Certification for criteria to qualify as a Washington State Small Business. <i>Note:</i> Regardless of size, a qualifying business must be owned and operated independently from all other businesses. In regard to size, the gross revenue thresholds, as reported on Bidder's tax returns, are as follows: ▪ Microbusiness: Annual gross revenue of less than one million dollars. ▪ Minibusiness: Annual gross revenue of more than one million dollars, but less than three million dollars. ▪ Small Business: Annual gross revenue of less than seven million dollars over each of the three prior consecutive years.	Yes ☐ No ☒ If yes, provide the location for Bidder's principal place of business: _____ Street Address _____ City, State, Zip Code If yes, what is your business size (based on annual gross revenue)? Microbusiness ☐ Minibusiness ☐ Small Business ☐

BIDDER INFORMATION	
Is your firm certified as a Veteran-Owned Business with the Washington State Department of Veteran Affairs? <i>Note: See Exhibit A-1 – Bidder's Certification for criteria to qualify as a Certified Veteran-Owned Business.</i>	Yes ☐ No ☒ If yes, provide Bidder's WDVA certification no.: _____

CONTRACT MANAGEMENT POINTS OF CONTACT FOR BIDDER	
Authorized Representative Name: <u>Nick Corley</u> Email: <u>Ncorley@Model1.com</u> Phone: <u>8886338380</u>	Contract Administrator Name: <u>Walter Pedersen</u> Email: <u>WPedersen@Model1.com</u> Phone: <u>8886338380</u>
Sales Reporting Representative Name: <u>Walter Pedersen</u> Email: <u>WPedersen@Model1.com</u> Phone: <u>8886338380</u>	Sales Reporting Alternate Name: <u>Jason Spore</u> Email: <u>JSpore@Model1.com</u> Phone: <u>8886338380</u>
Management Fee Representative Name: <u>Walter Pedersen</u> Email: <u>WPedersen@Model1.com</u> Phone: <u>8886338380</u>	Management Fee Contact Alternate Name: <u>Nick Corley</u> Email: <u>NCorley@Model1.com</u> Phone: <u>8886338380</u>
Address for Enterprise Services to send management fee invoices: Company name: <u>Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles</u> Attn: <u>Accounts Payable</u> Address: <u>9225 Priority Way, Suite 300</u> City/State/Zip: <u>Indianapolis, IN 46240</u>	
Address for Enterprise Services to send legal notices: Company name: <u>Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles</u> Attn: <u>Legal</u> Address: <u>9225 Priority Way, Suite 300</u> City/State/Zip: <u>Indianapolis, IN 46240</u>	

ORDERING/SALES POINTS OF CONTACT (expand as necessary)			
Name	Phone Number	E-mail	Area of Responsibility
Derek Wyman	<u>888-633-8380</u>	DWyman@Model1.com	Washington Management
Paul Watson	<u>888-633-8380</u>	PWatson@Model1.com	Washington Sales
Aaron Millette	<u>888-633-8380</u>	AMillette@Model1.com	Washington Sales

REFERENCES

Provide a minimum of three (3) commercial or government references for which bidder has delivered goods and/or services similar in scope as described in the Competitive Solicitation.

REFERENCE 1	
Company Name:	<u>Kitsap Transit</u>
Contact:	<u>Dennis Griffey</u>
Phone:	<u>(360) 478-6229</u>
Email:	<u>DennisG@KitsapTransit.com</u>
REFERENCE 2	
Company Name:	<u>Wyoming DOT</u>
Contact:	<u>Rob Rodriguez</u>
Phone:	<u>(307) 777-4181</u>
Email:	<u>robert.rodriguez1@wyo.gov</u>
REFERENCE 3	
Company Name:	<u>Arizona DOT</u>
Contact:	<u>Mike Normand</u>
Phone:	<u>(602) 712-8243</u>
Email:	<u>mnormand@azdot.gov</u>

WILL CALL/SERVICE LOCATIONS

Bidder must list at least one of service /repair location within the State of Washington to perform repairs and adjustments throughout the contract term. Bidder must complete below Service & Repair locations table. The bidder shall promptly notify Enterprise Services of any changes to their Service & Repairs locations table.

LOCATION	POINT OF CONTACT	PHONE NUMBER	AREA(S) OF RESPONSIBILITY
11601 Cyrus Way, Suite 101 Mukilteo, WA 98275	Brad Springer	425-609-1545	Service Manager

PURCHASE CARDS (I.E., CREDIT CARDS)

Please indicate which types of purchasing (credit) cards are accepted (note: any card fees must be included in the unit price of the bid):

☐ Visa ☐ Master Card ☐ American Express ☐ Discover ☐ Other: _____

Return this Bidder's Profile to Procurement Coordinator at: DESContractsTeamMaple@des.wa.gov



Exhibit B – Vehicle Specifications

07621 ADA COMPLIANT VANS, MINIVANS, & SPECIALTY VEHICLES (I.E., ADA WALK-IN STEP VANS)

Instructions

Below are the detailed vehicle specifications that describe the base vehicles per each category. Vehicles must be new and unused ADA Vans, ADA Mini Vans, and ADA Specialty Vehicles equipped with an ADA rear or side wheelchair ramp or an ADA rear wheelchair lift. The base vehicles for each category or sub-category(ies) must accommodate two (2) wheelchair positions. The base vehicle must fully comply with all ADA, and Federal Motor Vehicle Safety Standards (FMVSS) prior to delivery.

1. Bidders must check (in the list below) the appropriate category or sub-category (ies) that they will bid on.
2. Bidders are required to agree (select "yes") to all mandatory vehicle specification requirements for each solicitation category or category(ies) they wish to submit a bid proposal for.
 - a. If bidders only bid for one subcategory or multiple sub-categories within a category, they are required to write name of the subcategory(ies) in the "sub-category" column
3. Bidders are required to agree (select "Yes") for ADA Walk-In Step Van models that comply with all Federal Transit Administration (FTA) requirements and Altoona testing requirements and can be purchased by spending federal and WSDOT funds;
 - a. if ADA Walk-In Step Van models do not comply with all FTA requirements and Altoona testing requirements but are ADA compliant for the use of local funds and are made available to Purchasers, bidders must select "No" and provide an explanation in the "Written Response on Alternatives" column. WSDOT funded purchases are exempted from Buy American requirement.
4. Any bidder who does not fully comply (select "No") to all mandatory vehicle specification requirements within a specific category or sub-category(ies), ~~may be at risk of disqualification for contract award~~ **may be deemed non-responsive**.
5. If bidders offer vehicles that do not meet all vehicle specification requirements set forth in this Exhibit B- Vehicle Specifications, they can offer their vehicles as alternative vehicles, provided that:
 - a. Alternative vehicles are new products in the market and have similar functionality and usage as vehicles listed in the Exhibit B- Vehicle Specifications do, but different technical specifications; and

- b. The Sourcing Team must evaluate any proposed alternatives to see if they are allowed to be sold under this contract. The proposing bidder must identify the technical specifications that they are not meeting and identify which specifications they could meet.

Bidder is Submitting a Bid for the following Sub-categories or Categories	☒ Category 1- ADA Vans (6,000 -14,000 GVWR) ADA Van – Rear & Side Entry, Subcategories: ☒ Electric, Side Entry ☒ Electric, Rear Entry ☐ Hybrid/Plug-In Hybrid, Side Entry ☐ Hybrid/Plug-In Hybrid, Rear Entry ☐ Diesel, Side Entry ☐ Diesel, Rear Entry ☒ Gas, Side Entry ☒ Gas, Rear Entry ☒ Category 2- ADA Minivans Side/Rear Entry ~~6~~ 5,000 -14,000 GVWR, Subcategories: ☐ Electric, Side Entry ☐ Electric, Rear Entry ☐ Hybrid/Plug-In Hybrid, Side Entry ☒ Hybrid/Plug-In Hybrid, Rear Entry ☐ Diesel, Side Entry ☐ Diesel, Rear Entry ☒ Gas, Side Entry ☒ Gas, Rear Entry ☐ Category 3- ADA Specialty Vehicles 10,000-16,000 GVWR, Subcategories: ☐ Electric, Side Entry ☐ Electric, Rear Entry ☐ Hybrid/Plug-In Hybrid, Side Entry ☐ Hybrid/Plug-In Hybrid, Rear Entry ☐ Diesel, Side Entry ☐ Diesel, Rear Entry ☒ Gas, Side Entry

	☐ Gas, Rear Entry

Category 1 - ADA Vans (6,000 -14,000 GVWR)

ADA VAN – REAR & SIDE ENTRY

The items below are mandatory requirements for this vehicle type and must be provided by the awarded bidder(s) on contract. All bidders must indicate whether they can meet these requirements by responding “yes” or “no” or Alternative.

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on “Alternatives”
1	Chassis, Dimension, and Weight			
1.01	Vehicle Interior Height - The base vehicle's minimum interior height must meet all current ADA requirements.	☒ Yes ☐ No	1,2,7 & 8	
1.02	Aisle Width - The base vehicle aisle width and seating configurations must meet all current applicable ADA requirements based upon the seating configuration.	☒ Yes ☐ No	1,2,7 & 8	
1.03	<u>Gross Vehicle Weight (GVW)</u> - The manufacture must not exceed OEM chassis GVW.	☒ Yes ☐ No	1,2,7 & 8	
2	CHASSIS COMPONENTS			
2.01	<u>Engine</u> - The base vehicle's engine must be OEM chassis manufacturer's standard engine.	☒ Yes ☐ No	1 & 2 7 & 8	OEM Standard Electric Motor OEM Standard Engine
2.02	<u>Automatic Transmission</u> - The vehicle must have an OEM automatic transmission.	☒ Yes ☐ No	1 & 2 7 & 8	OEM Standard Electric Motor OEM Standard Transmission
2.03	Brakes - The base vehicle must be furnished with the chassis manufacturer's antilock brake system (ABS). The system	☒ Yes ☐ No	1,2,7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on "Alternatives"
	must be in accordance with Federal Motor Vehicle Safety Standard Number 121.			
2.04	<u>Alignment</u> - All 4 wheels must be aligned at the manufacturer prior to delivery and a computerized alignment printout must be supplied with vehicle.	☒ Yes ☐ No	1,2,7 & 8	
2.05	<u>Traction Control</u> - the vehicle must have stability control or traction assist	☒ Yes ☐ No	1,2,7 & 8	
2.06	<u>Window and Tint</u> - OEM windows tint, must be available on all side and rear windows.	☒ Yes ☐ No	1,2,7 & 8	
2.07	<u>Steering</u> Power assist steering must be included.	☒ Yes ☐ No	1,2,7 & 8	
2.08	<u>Back-up Alarm</u> - An alarm must be provided which provides an audible warning maximum 50 decibal, when the ignition switch is "on" and the vehicle transmission control is in reverse.	☒ Yes ☐ No	1,2,7 & 8	
2.09	<u>Audio and Clock</u> - OEM, or equivalent, AM/FM digital clock radio with 4 speakers must be mounted in the passenger compartment.	☒ Yes ☐ No	1,2,7 & 8	
3	BODY CONSTRUCTION			
3.01	<u>A minimum interior height must meet ADA requirements.</u>	☒ Yes ☐ No	1,2,7 & 8	
3.02	<u>Door Stops.</u> - Wheelchair lift doors must be installed with a door holder mechanism to keep the doors open when deploying the lift.	☒ Yes ☐ No	1,2,7 & 8	
3.03	<u>Floor</u> - The passenger floor covering must be upgraded, aftermarket flooring and have intrinsic anti-slip properties. The floor covering must be securely bonded to a sub floor. The floor covering must be installed without gaps or openings with all seams filled to prevent intrusion or seepage of water.	☒ Yes ☐ No	1,2,7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on "Alternatives"
3.04	<u>Windows</u> - The vehicle must have passenger windows. Cargo vans without side passenger body or door windows must not be allowed.	☒ Yes ☐ No	1,2,7 & 8	
3.05	<u>Sun Visors</u> - Sun visor must be installed on both, driver side and passenger side.	☒ Yes ☐ No	1,2,7 & 8	
3.06	<u>Storage</u> - A compartment must be available to the driver for storage. Overhead storage for driver is permissible.	☒ Yes ☐ No	1,2,7 & 8	
3.07	<u>Undercoating</u> - Undercoating must be applied to the underbody of each vehicle to prohibit intrusion of moisture.	☒ Yes ☐ No	1,2,7 & 8	
3.08	<u>Bumpers</u> - Front and rear bumpers must be as ordered from the OEM.	☒ Yes ☐ No	1,2,7 & 8	
3.09	<u>Mud Flaps</u> - Mud flaps must be installed on rear wheels.	☒ Yes ☐ No	1,2,7 & 8	
4	VEHICLE FEATURES			
4.01	<u>Passenger Seats</u> - OEM front and co-pilot passenger seat required for base vehicle.	☒ Yes ☐ No	1,2,7 & 8	
4.02	<u>Seat belt cutter</u> - Base vehicle must include a seatbelt cutter capable of cutting supplied wheelchair securement straps.	☒ Yes ☐ No	1,2,7 & 8	
4.03	<u>Wheelchair Lift Accessibility</u> - Base vehicle's ADA approved wheelchair lift or wheelchair ramp must meet or exceed FMVSS #403 & #404 requirements and all State, Federal, ICC, and ADA requirements. Minimum clear dimensions for platform are 34" wide X 51" length.	☒ Yes ☐ No	1,2,7 & 8	
4.04	<u>Interlock System</u> - Vehicle must be equipped with a lift interlock system that complies with all current applicable ADA requirements and be protected from the weather.	☒ Yes ☐ No	1,2,7 & 8	
4.05	<u>Wheelchair Securement</u> – Base vehicle's entire Tie-Down System, Lap/Shoulder securements, and floor mounting system (ie L-Track or equivalent) must meet FMVSS, ADA,	☒ Yes ☐ No	1,2,7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on "Alternatives"
	WC18 and WC19 requirements. Base model includes ~~two (2)~~ one(1) wheelchair positions.			
4.06	<u>Heating and Cooling System</u> - The vehicle must come equipped with OEM heat and air-conditioning.	☒ Yes ☐ No	1,2,7 & 8	
5	VEHICLE LIGHTING			
5.01	<u>Interior Lighting</u> - Passenger and lift doorways must be illuminated according to CFR 49 Part 38.31 (ADA) and must be illuminated whenever respective door is open.	☒ Yes ☐ No	1,2,7 & 8	
5.02	<u>Driver Courtesy Light</u> - Driver courtesy light must be located to allow illumination of the driver area and must illuminate when driver or passenger door is opened.	☒ Yes ☐ No	1,2,7 & 8	
5.03	<u>ADA Entrance Door Lighting</u> - ADA compliant entrance door lighting must be mounted to fully illuminate the exterior doorway of the wheelchair lift area. Lights must be wired to automatically turn on when wheelchair lift door is opened.	☒ Yes ☐ No	1,2,7 & 8	
5.04	<u>Exterior Lights</u> - All exterior lights and reflectors to meet Federal Motor Carrier Safety Regulation 393.11.	☒ Yes ☐ No	1,2,7 & 8	
5.05	<u>Engine Compartment Light</u> - At least one (1) engine light must be installed in the engine compartment and conveniently located.	☒ Yes ☐ No	1,2,7 & 8	
6	SAFETY KIT			
6.01	<u>First Aid Kit</u> - A 16-unit First Aid Kit meeting ANSI Z308.1-2003 Type I, II, III must be mounted in an easily accessible location per Purchaser request.	☒ Yes ☐ No	1,2,7 & 8	
6.02	Fire extinguisher – vehicle must include a minimum two and one-half (2 1/2) pound rechargeable fire extinguisher, mounted per Purchaser request.	☒ Yes ☐ No	1,2,7 & 8	
6.03	<u>Emergency Warning Triangle Kit</u> – Vehicles must include a kit of three emergency warning triangles with protective container mounted per Purchaser request. Both faces of the emergency warning triangle must consist of red reflective and orange, fluorescent material.	☒ Yes ☐ No	1,2,7 & 8	
7	SERVICE, WARRANTIES AND DELIVERY			

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on "Alternatives"
7.01	Maintenance and Inspection Schedule - Vehicle must be delivered with owner's manual, outlining preventative maintenance intervals.	☒ Yes ☐ No	1,2,7 & 8	
7.02	Quality Assurance - ADA and/or vehicle conversion must meet chassis manufacturer's quality assurance program, if available. Certification from chassis manufacturer must be submitted with proposal for each chassis.	☒ Yes ☐ No	1,2,7 & 8	
7.03	Tires must be covered by OEM warranty.	☒ Yes ☐ No	1,2,7 & 8	
7.04	Wheelchair lift or ramp must be covered by OEM warranty.	☒ Yes ☐ No	1,2,7 & 8	
7.05	Body structure materials and workmanship must be covered by OEM warranty.	☒ Yes ☐ No	1,2,7 & 8	
7.06	Installation, labor and workmanship (including electrical) performed by the body manufacturer, final stage manufacturer or bidder (if bidder installs components or otherwise completes vehicle) must be covered by OEM warranty.	☒ Yes ☐ No	1,2,7 & 8	
7.07	All other components and accessory equipment must be covered by a warranty of at least one (1) year/12,000 miles, unless covered by an applicable manufacturer's warranty exceeding this. Bidder must assist as needed in coordinating repairs within the warranty period for each component and applicable warranty.	☒ Yes ☐ No	1,2,7 & 8	
7.08	Bidder must provide a report of all warranties and excluded warranties associated with each vehicle.	☒ Yes ☐ No	1,2,7 & 8	
7.09	During established warranty periods, bidder and respective manufacturer must furnish all warranty parts at no cost to Purchaser. Replacement costs, parts and assemblies must be made without delay.	☒ Yes ☐ No	1,2,7 & 8	
7.10	Bidder must provide Purchaser, or a designated representative of Purchaser, the opportunity to inspect the	☒ Yes	1,2,7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on "Alternatives"
	vehicle for compliance with these specifications and applicable motor vehicle regulations. Such inspection must be completed prior to the delivery and acceptance of the vehicle.	☐ No		
7.11	Prior to releasing the vehicle to Purchaser, bidder must provide hands on instructions, by a qualified and experienced employee, in the proper and safe operation of all mechanical, electrical and hydraulic components in the vehicle. Towing procedures must be included in the instruction. Purchaser's driver/designee must conduct an operational familiarization test drive with Bidder's employee.	☒ Yes ☐ No	1,2,7 & 8	
8	FEDERAL MOTOR VEHICLE SAFETY STANDARDS			
8.01	Bidder must comply with all Federal Motor Vehicle Safety Standards (FMVSS) which are U.S. federal vehicle regulations specifying design, construction, performance, and durability requirements for motor vehicles and regulated automobile safety-related components, systems, and design features.	☒ Yes ☐ No	1,2,7 & 8	
9	ALTOONA TESTING REQUIREMENTS			
9.01	~~All dealer/manufacturers must be Altoona tested and certified if applicable (Altoona testing is not required only when exempted documentation is provided to the contract administrator from the FTA). Modified wheelchair-accessible vehicles typically have dropped floors and revised suspensions. These are major changes from the stock vehicle and therefore Altoona testing is required. The requirement for Altoona testing would depend on the extent (if any) to which the vans are modified from the stock configuration. If vans have had only limited modifications (e.g., adding a lift or raised roof) performed in strict compliance with the Manufacturer'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. Vehicles must meet a minimum performance standard to~~	☐ Yes ☐ No		Removed in Amendment #6

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on "Alternatives"
	receive an overall passing score and be eligible for purchase. Vehicles that fail to meet performance standards would be ineligible for purchase with FTA and WSDOT funds and ineligible for purchase on DES Statewide contract 07621 until the failures are resolved.			

Category 2 _ ADA Minivans (65,000 -14,000 GVWR)

ADA MINIVANS - SIDE & REAR ENTRY

The items below are mandatory requirements for this vehicle type and must be provided by the awarded bidder(s) on contract. All bidders must indicate whether they can meet these requirements by responding "yes" or "no" or Alternative.

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
1	CHASSIS COMPONENTS			
1.01	The base vehicle's engine must be OEM chassis manufacturer's standard gasoline engine.	☒ Yes ☐ No	4, 7 & 8	
1.02	The base vehicle's transmission must be OEM chassis manufacturer's standard automatic transmission.	☒ Yes ☐ No	4, 7 & 8	
1.03	Tilt/telescopic steering column.	☒ Yes	4, 7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
		☐ No		
1.04	The vehicle must have stability control and/or traction control.	☒ Yes ☐ No	4, 7 & 8	
1.05	The vehicle must be furnished with the chassis manufacturer's power assisted, self-adjusting, front and rear wheels, antilock brake system (ABS). The system must be in accordance with Federal Motor Vehicle Safety Standard Number 121.	☒ Yes ☐ No	4, 7 & 8	
1.06	All 4 wheels must be aligned at the manufacturer prior to delivery and a computerized alignment printout must be supplied with vehicle.	☒ Yes ☐ No	4, 7 & 8	
1.07	OEM tinted all side and rear windows.	☒ Yes ☐ No	4, 7 & 8	
1.08	OEM instrument panel.	☒ Yes ☐ No	4, 7 & 8	
1.09	Back-up Alarm must be provided which provides an audible warning when the ignition switch is "on" and the vehicle transmission control is in reverse.	☒ Yes ☐ No	4, 7 & 8	
1.10	OEM AM/FM/ ~~CD~~ -Digital Clock Radio with 4 speakers; two in front and two in rear.	☒ Yes ☐ No	4, 7 & 8	
1.11	OEM power steering.	☒ Yes ☐ No	4, 7 & 8	
1.12	OEM cruise control.	☒ Yes ☐ No	4, 7 & 8	
1.13	OEM dual zone air conditioning and heater, front and rear.	☒ Yes ☐ No	4, 7 & 8	
1.14	OEM intermittent wipers, rear window wiper/washer.	☒ Yes ☐ No	4, 7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
1.15	OEM power windows, door locks and side mirrors.	☒ Yes ☐ No	4, 7 & 8	
1.16	OEM rear window defroster.	☒ Yes ☐ No	4, 7 & 8	
1.17	OEM full length headliner.	☒ Yes ☐ No	4, 7 & 8	
1.18	Airbags, driver and front passenger.	☒ Yes ☐ No	4, 7 & 8	
1.19	OEM front passenger seat, cloth.	☒ Yes ☐ No	4, 7 & 8	
1.20	Driver and front passenger seat arm rest.	☒ Yes ☐ No	4, 7 & 8	
1.21	OEM seat belts with retractors for driver, front seat passenger.	☒ Yes ☐ No	4, 7 & 8	
1.22	Sliding side doors, on both sides of the vehicle.	☒ Yes ☐ No	4, 7 & 8	
1.23	Lift gate rear door.	☒ Yes ☐ No	4, 7 & 8	
2	ADA CONVERSION			
2.01	A minimum interior height must meet ADA requirements.	☒ Yes ☐ No	4, 7 & 8	
2.02	Wheelchair Entry - The wheelchair entry ramp must provide a minimum thirty-one- and one-half inches (31 1/2") clear opening width and a minimum fifty-six inches (56") door opening height from ramp to door header.	☒ Yes ☐ No	4, 7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
2.03	Wheelchair Securement – Tie-Down System, Lap/Shoulder securements, and floor mounting system (i.e. L-Track or equivalent) must meet ADA, WC18 and WC19 requirements. Base model includes ~~two (2)~~ one (1) wheelchair positions.	☒ Yes ☐ No	4, 7 & 8	
3	VEHICLE LIGHTING			
3.01	Passenger and ADA ramp doorways must be illuminated according to CFR 49 Part 38.31 (ADA) and must be illuminated whenever respective door is open.	☒ Yes ☐ No	4, 7 & 8	
3.02	Driver courtesy light must be located at the driver's console and must illuminate when driver or passenger door opened.	☒ Yes ☐ No	4, 7 & 8	
3.03	ADA compliant entrance door lighting must be mounted to fully illuminate the exterior doorway of the wheelchair ramp area. Lights must be wired to automatically turn on when the door is opened to deploy the wheelchair ramp.	☒ Yes ☐ No	4, 7 & 8	
3.04	All exterior lights and reflectors to meet Federal Motor Carrier Safety Regulation 393.11.	☒ Yes ☐ No	4, 7 & 8	
3.05	At least one (1) engine light is installed in the engine compartment conveniently located.	☒ Yes ☐ No	4, 7 & 8	
4	VEHICLE SEATS AND SEATINGS ARRANGEMENT			
4.01	Base vehicle floorplan must include ~~two (2)~~ one (1) wheelchair positions.	☒ Yes ☐ No	4, 7 & 8	
5	SAFETY KIT			
5.01	<u>First Aid Kit</u> - A 16 unit First Aid Kit meeting ANSI Z308.1-2003 Type I, II, III must be mounted in an easily accessible location per Purchaser request.	☒ Yes ☐ No	4, 7 & 8	
5.02	Emergency Warning Triangle Kit - A kit of three emergency warning triangles with protective container mounted per Purchaser request. Both faces of the emergency warning triangle must consist of red reflective and orange fluorescent material.	☒ Yes ☐ No	4, 7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
5.03	Fire extinguisher must be a Minimum 2.5 lb rechargeable, mounted per Purchaser's request.	☒ Yes ☐ No	4, 7 & 8	
6	SERVICE, DELIVERY AND WARRANTIES			
6.01	Maintenance and Inspection Schedule - Vehicle to be delivered with owner's manual, outlining preventative maintenance intervals.	☒ Yes ☐ No	4, 7 & 8	
6.02	The bidder must provide the Purchaser or a designated representative of the Purchaser the opportunity to inspect the vehicle for compliance with these specifications and applicable motor vehicle regulations. The inspections must be completed prior to the delivery and acceptance of the vehicle.	☒ Yes ☐ No	4, 7 & 8	
6.03	Prior to releasing the vehicle to the Purchaser, the bidder must provide hands on instructions, by a qualified and experienced employee, in the proper and safe operation of all mechanical, electrical and hydraulic components in the vehicle.	☒ Yes ☐ No	4, 7 & 8	
6.04	Vehicle conversion manufacturer must meet chassis manufacturer's quality assurance program, if available.	☒ Yes ☐ No	4, 7 & 8	
6.05	During established warranty periods, the bidder and respective manufacturer must furnish all applicable warranty parts at no cost to the transit system or Purchasers. Replacement costs, parts and assemblies must be made without delay.	☒ Yes ☐ No	4, 7 & 8	
6.06	The bidder must provide a report of all warranties and excluded warranties associated with each vehicle.	☒ Yes ☐ No	4, 7 & 8	
6.07	Tires must be covered by tire manufacturer warranty.	☒ Yes ☐ No	4, 7 & 8	
6.08	Wheelchair ramp system must be covered by ramp manufacturer warranty.	☒ Yes ☐ No	4, 7 & 8	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
6.09	Chassis structure materials and workmanship must be covered by OEM warranty.	☒ Yes ☐ No	4, 7 & 8	
6.10	Installation, labor and workmanship (including electrical) performed by the conversion manufacturer, final stage manufacturer or bidder (if bidder installs components or otherwise completes vehicle) must be covered by conversion manufacturer warranty.	☒ Yes ☐ No	4, 7 & 8	
6.11	All other components and accessory equipment must be covered by a warranty of at least one (1) year/12,000 miles, unless covered by an applicable manufacturer's warranty exceeding this. The bidder must assist as needed in coordinating repairs within the warranty period for each component and applicable warranty.	☒ Yes ☐ No	4, 7 & 8	
7	FEDERAL MOTOR VEHICLE SAFETY STANDARDS			
7.01	Bidder must comply with all Federal Motor Vehicle Safety Standards (FMVSS) which are U.S. federal vehicle regulations specifying design, construction, performance, and durability requirements for motor vehicles and regulated automobile safety-related components, systems, and design features.	☒ Yes ☐ No	4, 7 & 8	
8	ALTOONA TESTING REQUIREMENTS			
8.01	~~All dealer/manufacturers must be Altoona tested and certified if applicable (Altoona testing is not required only when exempted documentation is provided to the contract administrator from the FTA). The Federal Transit Administration (FTA) requires vehicles to go through Altoona testing requirements when federal funding is being used to purchase vehicles. Modified wheelchair-accessible vehicles typically have dropped floors and revised suspensions. These are major changes from the stock vehicle and therefore Altoona testing is required. The requirement for Altoona testing would depend on the extent (if any) to which the vans are modified from the stock configuration. If vans have had only limited modifications (e.g., adding a lift or raised roof) performed in strict compliance with the Manufacturer's~~	☐ Yes ☐ No		Removed in Amendment #6

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
	~~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. Vehicles must meet a minimum performance standard to receive an overall passing score and be eligible for purchase using FTA financial assistance. Vehicles that fail to meet performance standards would be ineligible for purchase with FTA and WSDOT funds and ineligible for purchase on DES Statewide contract 07621 until the failures are resolved.~~			

Category 3 - ADA Specialty Vehicles (10,000-16,000 GVWR)

ADA Specialty Vehicles - REAR & SIDE ENTRY

The items below are mandatory requirements for this vehicle type and must be provided by the awarded bidder(s) on contract. All bidders must indicate whether they can meet these requirements by responding "yes" or "no" or Alternatives.

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
1	DIMENSIONS, WEIGHT AND PAYLOADS			
1.01	~~Vehicle Overall Length~~ - The overall length of vehicle, bumper to bumper, must be approximately 285 inches.	☐ Yes ☐ No		
1.02	~~Vehicle Overall Height~~ - The overall height of the vehicle, from ground to top, must be approximately 104" inches. Excluding A/C inches.	☐ Yes ☐ No		
1.03	~~Vehicle Interior Height~~ - The minimum interior headroom must be 73" inches at center of rear passenger seat cushion.	☐ Yes ☐ No		

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
1.04	<u>Curb Weight</u> - The curb weight of the vehicle must include the weight of the vehicle and the weight of all attachments, accessories, standard and optional equipment, a full fuel tank, lubricants, and coolants.	☒ Yes ☐ No	7	
1.05	<u>Passenger Seats Spacing</u> - Minimum of 26 inches knee-to-hip spacing between passenger seats in standard seating configuration.	☒ Yes ☐ No	7	
1.06	<u>Gross Vehicle Weight (GVW)</u> - The GVW must consist of the curb weight and payload. The GVW is the actual vehicle weight with the payload. Gross Vehicle Weight Rating (GVWR) of the completed vehicle must not exceed the GVW of the chassis and be appropriate for application described, a full tank of fuel, driver, the number of passengers and wheelchairs described. Any exceptions to this requirement, seating capacity, or any other specification must be noted.	☒ Yes ☐ No	7	
1.07	<u>Payload Capacity</u> - The vehicle must have the payload capacity to transport the driver, ambulatory individuals, and persons with disabilities in a wheelchair safely and legally in any seating variation for the chosen configuration. The payload capacity of the vehicle must be determined by its seating configuration. The payload capacity must not be less than the weight computed from the number of seated passengers and wheelchairs positions. The weight of each seated ambulatory passenger must be calculated at 150 lbs. and each wheelchair position must be calculated at 200 lbs.	☒ Yes ☐ No	7	
2	CHASSIS COMPONENTS			
2.01	<u>Engine</u> - The engine must be manufacturer's standard or optional engine for the vehicle which meets or exceeds the requirements of the Purchaser's description.	☒ Yes ☐ No	7	
2.02	<u>Cooling System</u> - ~~Cooling system must have OEM's heavy duty pressurized liquid cooling system.~~ Cooling system must be OEM or Alternative Equivalent.	☒ Yes ☐ No	7	
2.03	<u>Automatic Transmission</u> . The vehicle must have an OEM automatic transmission.	☒ Yes ☐ No	7	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
2.04	<u>Fuel Tank</u> - The fuel tank must have a minimum capacity of 24 gallons (21.1 GGE for CNG model only). The fuel system and fuel tanks must be in accordance with Federal Motor Carrier Safety Regulations 301 and 303 (for the CNG model).	☒ Yes ☐ No	7	
2.05	<u>Brake System</u> - The vehicle must be furnished with the manufacturer's power assisted, 4-wheel Anti-lock disc brakes (ABS). The system must be in accordance with Federal Motor Vehicle Safety Standard Number 105.	☒ Yes ☐ No	7	
2.06	<u>Alignment</u> - The front end must be aligned, per manufacturers guidelines (toe-in, caster, camber, etc.), and the front wheels balanced after completion of body on chassis. All 4 wheels must be aligned at the manufacturer prior to delivery.	☒ Yes ☐ No	7	
2.07	<u>Wheels</u> P235-65 R17 All Season Tires, on Steel wheels; 108S load rating Tire selection and rims according to FMVSS ~~119~~ 119 (motor vehicles with a GVWR of 10,000 lbs or over less) Tire Sealant & Inflator kit provided with each vehicle.	☒ Yes ☐ No	7	Equal: LT225/75-R16, Load Rating 115R
2.08	<u>Traction Control</u> - the vehicle must have either Traction Control (TC) or Electronic Stability Control (ESC)	☒ Yes ☐ No	7	
2.09	<u>Window Tint</u> OEM tint, available on all side and rear windows	☒ Yes ☐ No	7	
2.10	~~<u>Wheel Base</u> - Vehicle must have a wheel base of 122 inches.~~	☐ Yes ☐ No		
2.11	<u>Gauges</u> - ~~full gauge package including fuel, oil pressure, water temperature, ammeter or voltmeter.~~ Chassis to include OEM dash with factory gauges/readouts or similar.	☒ Yes ☐ No	7	
2.12	<u>Audio and Clock</u> - OEM, or equivalent, AM/FM/ ~~CD~~ Digital Clock Radio with 4 speakers mounted in the passenger compartment.	☒ Yes ☐ No	7	
2.13	<u>Side Mirrors</u> - OEM Power adjustable, manual folding (in both fore and aft directions) side mirrors on both driver and passenger of the vehicle.	☒ Yes ☐ No	7	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
3	ELECTRICAL			
3.01	<u>Control Switch</u> - All control switch labeling and designations in the driver's compartment must meet FMVSS 101.	☒ Yes ☐ No	7	
3.02	<u>Wiring Harness</u> - All looms and wiring harnesses must be secured to the body or chassis frame with insulated, corrosion resistant polyethylene or metal insulated cable clamps every 18 inches, or closer as required, to prevent sagging and movement which results in chaffing, abrasion, pinching, snagging, or any other damage. All holes through which wires pass must be grommet or utilize an acceptable feed through connector. All holes must be water and moisture sealed using an OEM type sealant. Connectors must be waterproof, OEM, crimp type connectors or soldered splices with heat shrink tubing to protect joint. All components must be grounded to paint free areas and ground terminals must be sprayed with a battery type spray sealant.	☒ Yes ☐ No	7	
4	BODY CONSTRUCTION			
4.01	<u>Vehicle Body Construction</u> - ~~The vehicle must have a steel body with a composite front and rear fascia. Interior materials must comply with FMVSS 302 (flammability)~~ The vehicle must be OEM steel unibody construction. Front and rear fascia are provided by the OEM chassis manufacturer and may not be composite.	☒ Yes ☐ No	7	
4.02	<u>Access Doors</u> - ~~Doors must be a stamped metal consistent with the OEM quality and follow the vehicle body lines.~~ Doors must be ADA compliant and have a minimum 56 inch clear door opening height.	☒ Yes ☐ No	7	
4.03	<u>Welding</u> - Welding procedures used throughout the vehicle including materials, methods and personnel must be in accordance with ASTM and American Welding Society Standards.	☒ Yes ☐ No	7	
4.04	<u>Exterior Finishing</u> - Exterior body panels should be steel on an OEM van. ~~Exterior body panels must be galvanized steel, aluminum, composite or fiberglass with a white finish.~~	☒ Yes ☐ No	7	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
	~~Dissimilar metals must be insulated to prevent galvanic action.~~ With the exception of stainless steel, all metal must be pre-treated, primed, and painted to resist corrosion for the life of the vehicle.			
4.05	<u>Interior Finishing</u> - Interior must be made of FRP or ABS panels or equivalent. ~~Interior should be OEM finish. Interior finish must be ebony, grey or light tone, color coordinated with seats, floor and exterior.~~	☒ Yes ☐ No	7	
4.06	<u>Water Test</u> - Body must be thoroughly water tested to ensure no leakage. The roofs, windows, windshields, and all seams and joints must be tested. Documentation must be furnished for each vehicle delivered under this agreement demonstrating the vehicle has passed water testing.	☒ Yes ☐ No	7	
4.07	<u>Floor</u> - ~~The floor stamping~~ includes structure to accommodate wheel chair tie downs and driver's seat. Covering is anti-slip flooring meeting ADA/CSA-D409-02 guidelines.	☒ Yes ☐ No	7	
4.08	<u>Sun Visors</u> - Sun visor must be installed on both driver side and passenger side.	☒ Yes ☐ No	7	
4.09	<u>Bumpers</u> - Front and rear bumpers must be as ordered from the OEM.	☒ Yes ☐ No	7	
5	VEHICLE FEATURES			
5.01	<u>Passenger Seats</u> - All seats must have integrated shoulder belts in compliance with FMVSS# 207.	☒ Yes ☐ No	7	
5.02	~~<u>Flip Seats and Fold-away Seats</u> - All flip seats and fold-away seats are to be single (one passenger) and must meet FMVSS 207 and 210, unless otherwise specified.~~	☐ Yes ☐ No		
5.03	~~<u>Handrails</u> - per ADA, entry assist grab handle integrated with right hand and left hand side of entry door.~~	☐ Yes ☐ No		
5.04	<u>Seat materials</u> - All seat materials must meet FMVSS #302. ~~Pilot/copilot seat shall have OEM covers. Grey color vinyl upholstery standard.~~	☒ Yes ☐ No	7	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
5.05	<u>Seat Belts</u> - Must meet FMVSS #209 and #210. The driver's seat must be equipped the OEM retracting seat belt. ~~All standard passenger seats must be equipped with 3-pt. shoulder belts.~~	☒ Yes ☐ No	7	
5.06	<u>Ramp</u> - ADA approved ramp that meets all State, Federal, ICC, and ADA requirements. Minimum clear dimensions for platform are 30" wide x 51" length.	☒ Yes ☐ No	7	
5.07	<u>Wheelchair Securement Devices</u> - Wheelchair securement devices must be automatic, self tensioning and self locking and must comply with all ADA, SAE J2249 and ISO 10542 performance and installation requirements. Wheelchair securement must be aluminum "L" track ~~or Slide and Click.~~ All wheelchair securement devices provided and the installation thereof, performance pursuant to this specification, must meet or surpass the minimum standards per ADA, SAE J2249 and ISO 10542 requirements, including all shoulder harness mounting hardware. Shoulder harness must have an adjustable height adjuster to compensate for variations in the size of the mobility device or passenger. Wheelchair securement devices must be universal in application for ease of use or approved equal.	☒ Yes ☐ No	7	
5.08	<u>Floor track</u> - ~~Floor track must be full-length floor track or equivalent, or either of them. Floor track must be flange mount "L" track 6351 aluminum grade or approved equal.~~	☒ Yes ☐ No	7	
5.09	<u>Heating and Cooling System</u> - The vehicle must have highest capacity OEM heater and air conditioning.	☒ Yes ☐ No	7	
6	VEHICLE LIGHTING			
6.01	<u>Interior Lighting</u> - A minimum of four (4) overhead lights to illuminate automatically when door is opened. and switched at driver's console. Passenger and ramp doorways must be illuminated according to CFR 49 Part 38.31 (ADA) and must be illuminated whenever respective door is open.	☒ Yes ☐ No	7	
6.02	<u>Lighting Fixtures Mounting</u> - All lighting fixtures must be flush mounted, to the maximum extent Practicable to	☒ Yes	7	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
	prevent accidental dislodgement of light cover or present a hazard to passengers.	☐ No		
6.03	<u>ADA Entrance Door Lighting</u> - ADA compliant entrance door lighting must be mounted to fully illuminate the exterior doorway of the ~~wheelchair ramp area~~ wheelchair LIFT, ramp, or low-floor entrance area . Lights must be wired to automatically turn on when ~~wheelchair ramp~~ wheelchair LIFT, ramp, or low-floor entrance area door is opened.	☒ Yes ☐ No	7	
6.04	<u>Exterior Lights</u> - All exterior lights and reflectors to meet Federal Motor Carrier Safety Regulation 108.	☒ Yes ☐ No	7	
7	DESIGNED TO TRANSPORT			
7.01	Designed to Transport - The final stage manufacturer must determine the original final seating capacity of each vehicle. The manufacturer's certification Tire and Loading Information label must indicate the original seating capacity of the vehicle and must be affixed to either the vehicle driver's door and/or "B" pillar for protection from wear. The Vehicle Certification label must state "MPV" (Multi Passenger Vehicle) on the underside of the hood. The number of passengers the vehicle is designed for including driver must be on the TREAD Act label (Tire and Loading Information label).	☒ Yes ☐ No	7	
8	SERVICE, WARRANTIES AND DELIVERY			
8.01	Maintenance and Inspection Schedule - a single comprehensive maintenance and inspection schedule for each type of vehicle for which a proposal is submitted, that incorporates the required maintenance and inspection of body, chassis, tires, wheelchair lift and other equipment and sub-systems, as prescribed by the respective manufacturers. The maintenance and inspections schedule must be supplied with each vehicle.	☒ Yes ☐ No	7	
8.02	~~Wheelchair ramp system must be covered by OEM warranty.~~ Wheelchair ramp system, if required per ADA, must be covered by OEM warranty or by manufacturer warranty.	☒ Yes ☐ No	7	

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
8.03	Body structure materials and workmanship must be covered by OEM warranty.	☒ Yes ☐ No	7	
8.04	Installation, labor and workmanship (including electrical) performed by the body manufacturer, final stage manufacturer or bidder (if bidder installs components or otherwise completes vehicle) must be covered by OEM warranty.	☒ Yes ☐ No	7	
8.05	All other components and accessory equipment must be covered by a warranty of at least one (1) year/12,000 miles, unless covered by an applicable manufacturer's warranty exceeding this. The Proposer must assist as needed in coordinating repairs within the warranty period for each component and applicable warranty.	☒ Yes ☐ No	7	
8.06	The responder must provide a report of all warranties and excluded warranties associated with each vehicle.	☒ Yes ☐ No	7	
8.07	During established warranty periods, the bidder and respective manufacturer must furnish all warranty parts at no cost to the transit system. Replacement costs, parts and assemblies must be made without delay.	☒ Yes ☐ No	7	
8.08	The bidder must provide the recipient, or a designated representative of the recipient, the opportunity to inspect the vehicle for compliance with these specifications and applicable motor vehicle regulations. The inspection's must be completed prior to delivery and acceptance of the vehicle.	☒ Yes ☐ No	7	
9	FEDERAL MOTOR VEHICLE SAFETY STANDARDS			
9.01	Bidder must comply with all Federal Motor Vehicle Safety Standards (FMVSS) which are U.S. federal vehicle regulations specifying design, construction, performance, and durability requirements for motor vehicles and regulated automobile safety-related components, systems, and design features.	☒ Yes ☐ No	7	
10	ALTOONA TESTING REQUIREMENTS			

	Mandatory Specification Requirements	Bidder's Compliance	Sub-category(ies)	Written Response on Alternatives
10.01	All dealer/manufacturers must be Altoona tested and certified if applicable (Altoona testing is not required only when exempted documentation is provided to the contract administrator from the FTA). The Federal Transit Administration (FTA) requires vehicles to go through Altoona testing requirements when federal funding is being used to purchase vehicles. Modified wheelchair-accessible vehicles typically have dropped floors and revised suspensions. These are major changes from the stock vehicle and therefore Altoona testing is required. The requirement for Altoona testing would depend on the extent (if any) to which the vans are modified from the stock configuration. If vans have had only limited modifications (e.g., adding a lift or raised roof) performed in strict compliance with the Manufacturer'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. Vehicles must meet a minimum performance standard to receive an overall passing score and be eligible for purchase using FTA financial assistance. Vehicles that fail to meet performance standards would be ineligible for purchase with FTA and WSDOT funds and ineligible for purchase on DES Statewide contract 07621 until the failures are resolved.	☐ Yes ☐ No		Removed in Amendment #6

Federal Transit Administration (FTA) Guidelines & Buy America

Contract # - Commodity

1. No Obligation by the Federal Government.

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

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

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

(1) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

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

3. Access to Records - The following access to records requirements apply to this Contract:

(1) Where the Purchaser is not a State but a local government and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 18.36(i), the Contractor agrees to provide

the Purchaser, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C.F.R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.

(2) Where the Purchaser is a State and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 633.17, Contractor agrees to provide the Purchaser, the FTA Administrator or his authorized representatives, including any PMO Contractor, access to the Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311. By definition, a major capital project excludes contracts of less than the simplified acquisition threshold currently set at \$100,000.

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

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

(5) 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.

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

(7) FTA does not require the inclusion of these requirements in subcontracts.

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

5. TERMINATION

(1) Termination for Convenience - The (Recipient) may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the Government's best interest. The Contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit its termination claim to (Recipient) to be paid the Contractor. If the Contractor has any property in its possession belonging to the (Recipient), the Contractor will account for the same, and dispose of it in the manner the (Recipient) directs.

(2) Termination for Default - If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or, if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the (Recipient) may terminate this contract for default. Termination shall be effected by serving a notice of termination on the contractor setting forth the manner in which the Contractor is in default. The contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined by the (Recipient) that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, the (Recipient), after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.

(3) Opportunity to Cure - The (Recipient) in its sole discretion may, in the case of a termination for breach or default, allow the Contractor [an appropriately short period of time] in which to cure the defect. In such case, the notice of termination will state the time period in which cure is permitted and other appropriate conditions

If Contractor fails to remedy to (Recipient)'s satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within [ten (10) days] after receipt by Contractor of written notice from (Recipient) setting forth the nature of said breach or default, (Recipient) shall have the right to terminate the Contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude (Recipient) from also pursuing all available remedies against Contractor and its sureties for said breach or default.

(4) Waiver of Remedies for any Breach In the event that (Recipient) elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this Contract, such waiver by (Recipient) shall not limit (Recipient)'s remedies for any succeeding breach of that or of any other term, covenant, or condition of this Contract.

6. Civil Rights - The following requirements apply to the underlying contract:

(1) Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for

employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

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

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

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

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

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

7. Disadvantaged Business Enterprises

(1) This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The agency's overall goal for DBE participation is __ %. A separate contract goal [of __ % DBE participation has] [has not] been established for this procurement.

(2) The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as {insert agency name} deems appropriate. Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).

(3) {If a separate contract goal has been established, use the following} Bidders/Offerors are required to document sufficient DBE participation to meet these goals or, alternatively, document adequate good faith efforts to do so, as provided for in 49 CFR 26.53. Award of this contract is conditioned on submission of the following [concurrent with and accompanying sealed bid] [concurrent with and accompanying an initial proposal] [prior to award]:

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

[Bidders][Offerors] must present the information required above [as a matter of responsiveness] [with initial proposals] [prior to contract award] (see 49 CFR 26.53(3)).

{If no separate contract goal has been established, use the following} The successful bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.

(4) The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the contractor's receipt of payment for that work from the {insert agency name}. In addition, [the contractor may not hold retainage from its subcontractors.] [is required to return any retainage payments to those subcontractors within 30 days after the subcontractor's work related to this contract is satisfactorily completed.] [is required to return any retainage payments to those subcontractors within 30 days after incremental acceptance of the subcontractor's work by the {insert agency name} and contractor's receipt of the partial retainage payment related to the subcontractor's work.]

(5) The contractor must promptly notify {insert agency name}, whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of {insert agency name}.

8. Incorporation of Federal Transit Administration (FTA) Terms - The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular

4220.1E, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any (name of grantee) requests which would cause (name of grantee) to be in violation of the FTA terms and conditions.

9. Debarment and Suspension

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the contractor 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 contractor 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 {insert agency name}. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to {insert agency name}, 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.

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

11. Clean Water –

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

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

12. Clean Air –

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

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

13. Contract Work Hours and Safety Standards

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

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

(3) Withholding for unpaid wages and liquidated damages - The (write in the name of the grantee) 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.

14. Rolling Stock—Special Requirements. The following Federal laws and regulations impose requirements that may affect rolling stock procurements:

(1) Accessibility. Rolling stock must comply with the accessibility requirements of DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 CFR Part 37, and Joint ATBCB/DOT regulations, "Americans with Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 CFR Part 1192 and 49 CFR Part 38.

(2) Transit Vehicle Manufacturer Compliance with DBE Requirements. Before a transit vehicle manufacturer (TVM) may submit a bid or proposal to provide vehicles to be financed with FTA assistance, 49 CFR Section 26.49 requires the TVM to submit a certification that it has complied with FTA's DBE requirements.

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

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Contract #

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

A bidder or offeror must submit to the FTA recipient the appropriate Buy America certification (below) 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.

Certification requirement for procurement of buses, other rolling stock and associated equipment.

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

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date 8/31/23

Signature Nick Corley

Company Name Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles

Title Transit Bid Manager

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

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

16. Fly America Requirements

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

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17. Cargo Preference - Use of United States-Flag Vessels - The contractor agrees: a. to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels; b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of leading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.) c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

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

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

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

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

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

CERTIFICATION OF COMPLIANCE WITH FTA'S BUS TESTING REQUIREMENTS

The undersigned [Contractor/Manufacturer] certifies that the vehicle offered in this procurement complies with 49 U.S.C. A 5323(c) and FTA's implementing regulation at 49 CFR Part 665.

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

Date: 8/31/23

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Contract #

Signature: Nick Corley

Company Name: Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles

Title: Transit Bid Manager

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

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

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

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

BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS
FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

Certificate of Compliance

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

Date: 8/31/23

Signature: Nick Corley

Company Name: Creative Bus Sales, Inc. dba Model 1 Commercial Vehicles

Title: Transit Bid Manager

Certificate of Non-Compliance

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

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(j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Date: _____

Signature: _____

Company Name: _____

Title: _____

20. LOBBYING

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of \$100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

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

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

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413

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(1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

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

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

Creative Bus Sales, Inc. dba Model

The Contractor, 1 Commercial Vehicles, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, et seq., apply to this certification and disclosure, if any.

Nick Corley Signature of Contractor's Authorized Official

Nick Corley / Transit Bid Manager Name and Title of Contractor's Authorized Official

8/31/23 Date

21. BREACHES AND DISPUTE RESOLUTION

Disputes - Disputes arising in the performance of this Contract which are not resolved by agreement of the parties shall be decided in writing by the authorized representative of (Recipient)'s [title of employee]. 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 [title of employee]. 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 [title of employee] shall be binding upon the Contractor and the Contractor shall abide by the decision.

Performance During Dispute - Unless otherwise directed by (Recipient), Contractor shall continue performance under this Contract while matters in dispute are being resolved.

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

Remedies - Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between the (Recipient) and the Contractor arising out of or relating to this

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Contract #

agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the (Recipient) is located.

Rights and Remedies - The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the (Recipient), (Architect) or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

***Mobility*TRANS**

Paratransit & Passenger Vans

10-29-2021

In regards to: Ford Transit Altoona Testing

To whom it may Concern:

Per correspondence with the Federal Transit Administration, the Ford Transit van is exempt from any Altoona testing when constructed and sold as a 4-year, 100,000-mile service life vehicle. MobilityTRANS, offers its models in the 4-year, 100,000 mile service life category and therefore is not required to adhere to any full or partial Altoona testing.

Thank You,

A handwritten signature in dark ink, appearing to read "Dave Brown". The signature is fluid and cursive, with the first name "Dave" being more prominent than the last name "Brown".

Dave Brown,

President, MobilityTRANS

FEDERAL TRANSIT BUS TEST

**Performed for the Federal Transit Administration U.S. DOT
In accordance with 49 CFR, Part 665**

Manufacturer: BraunAbility / The Braun Corporation

**Model: 2020 Chrysler Pacifica/Voyager Commercial
Wheelchair Accessible Vehicle with Rear-Entry
Manual Foldout Ramp**

**Tested in Service-Life Category
4 Year / 100,000 Miles**

February 2021

Report Number: LTI-BT-R2020-09

**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 Plank Road
Duncansville, PA 16635
(814) 695-3404**



PennState
College of Engineering

**LTI BUS RESEARCH
AND TESTING CENTER**

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration, U.S. DOT
1200 New Jersey Avenue, SE
Washington, DC 20590

In accordance with 49 CFR Part, 665

Manufacturer: BraunAbility / The Braun Corporation
Manufacturer's address: 631 W. 11th Street
Winamac, IN 46996

Model: 2020 Chrysler Pacifica/Voyager Commercial
Wheelchair Accessible Vehicle with
Rear-Entry Manual Foldout Ramp

Tested in Service-Life Category
4 Year / 100,000 Miles

Report Number: LTI-BT-R2020-09



David Klinikowski

Quality Authorization

Director, Bus Research
and Testing Center

Title

02/11/2021

Date

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EXECUTIVE SUMMARY

TEST HIGHLIGHTS

The information in this report pertains only to this specific bus, as received from the manufacturer for testing.

The Check-In section of the report provides a description of the bus and specifies its major components. The following table gives the salient specifications.

Manufacturer	BraunAbility / The Braun Corporation
Model	2020 Chrysler Pacifica/Voyager Commercial Wheelchair Accessible Vehicle with Rear-Entry Manual Foldout Ramp
Chassis Make/Model	Chrysler / Voyager
Chassis Modified	Yes (Modification details on page 8)
Length	16 feet, 10 ½ inches
Fuel	Gasoline
Service Life	4 Years / 100,000 miles
Number of Seats (including driver)	4 seats and 1 wheelchair position
Manufacturer-Designated Standing Passenger Capacity	0
Gross Vehicle Weight used for testing	5,930 lb.
Manufacturer Specified Gross Vehicle Weight Rating	6,055 lb.
Mileage at Delivery	56
Test Start Date	September 28, 2020
Test Completion Date	December 17, 2020

The measured curb weight was 2,620 lb. for the front axle and 2,110 lb. for the rear axle. These combined weights provided a total measured curb weight of 4,730 lb. There are 4 seats including the driver and one wheelchair position, bringing the potential total passenger capacity to 5. There is no free floor space for standing passengers due to the vehicle type. Therefore, the gross load represents seated passengers only, for a total of 5 passengers. Gross load is calculated as (150 lb. x 4) + (600 lb. x 1) = 1,200 lb. At full declared capacity, the measured gross vehicle weight was 5,930 lb.

BUS TESTING BACKGROUND

On August 1, 2016, FTA announced a final rule for bus testing for improving the process of ensuring the safety and reliability of new transit buses. The rule satisfies requirements in MAP-21 to establish minimum performance standards, a standardized scoring system, and a pass-fail threshold based on the score.

FTA's Bus Testing Program (often referred to as "Altoona Testing" due to the location of the main testing center) tests new transit bus models for:

- Maintainability
- Reliability
- Safety
- Performance (including Braking Performance)
- Structural Integrity (including Structural Durability)
- Fuel Economy (Energy Efficiency and Range, for electric buses)
- Noise
- Emissions

Bus models that fail to meet one or more minimum performance standards will “fail” their test and thus be ineligible for purchase with FTA funds until the failures are resolved and validated through further testing. FTA will use this authority to make sure defects are corrected before a bus model can be acquired with FTA funding.

In each application to FTA for the purchase or lease of any new bus model, or any bus model with a major change in configuration or components to be acquired or leased with funds obligated by the FTA, the recipient shall certify that it has received the appropriate full Bus Testing Report and any applicable partial testing report(s) before final acceptance of the first vehicle. In dealing with a bus manufacturer or dealer, the recipient shall be responsible for determining whether a vehicle to be acquired requires full testing or partial testing or has already satisfied the requirements of this part. A bus manufacturer or recipient may request guidance from FTA in making these determinations.

The purpose of the testing is intended set a “Pass/Fail” standard and grade the performance of the buses in order to provide performance information to the transit authorities that can be used in their purchase or lease decisions. The intent of this report is to provide the grantee a relative measure of the performance of a particular model of transit bus against a standard of performance. The passing of this test should ensure a vehicle has a high probability of meeting its service life in the category it was tested.

The data included in this test report and other applicable reports should be reviewed to choose the most suitable bus for a grantee’s operation. A higher scoring bus is not necessarily the best bus for a given application. For example, a bus with a powerful engine may score well because of its performance and gradeability, but another bus with a smaller and more fuel-efficient engine could be a better choice for applications in mostly flat areas. It is the responsibility of the grantee to ensure the proper test report or applicable partial report is in their possession and has been thoroughly reviewed.

The score sheet for the subject vehicle of this test report is provided below. **This bus passed the Altoona test, with an aggregate score of 92.9.**

Bus 2020-09 BraunAbility / The Braun Corporation							
Test category	Standard	Base Pts.	Bonus Pts.	Range	Test Data	Score	FAIL
1. Maintainability	Unscheduled maint.	2	14	0	125	0	16.00
2. Reliability	# Class 2 failures	2	6	0	2	0	8.00
	Hazards	10	0	P	F	P	10.00
	Stability	2.5	0	P	F	P	2.50
3. Safety	< 158 feet at 45mph	0.5	2	80	158	84.7	2.38
	Braking	2.5	0	P	F	P	2.50
	Parking brake, 20% grade	2.5	0	P	F	P	2.50
	Acceleration 0-30 mph	1.5	0	P	F	P	1.50
4. Performance	Gradeability 2.5%	1.5	0	P	F	P	1.50
	Gradeability 10%	2	0	P	F	P	2.00
	Distortion	1	0	P	F	P	1.00
	Static Towing	1	0	P	F	P	0.00
	Dynamic Towing	1	0	P	F	P	1.00
5. Structural Integrity	Jacking	1	0	P	F	P	1.00
	Hoisting	1	0	P	F	P	1.00
	Durability-Structural	13	0	P	F	P	13.00
	Durability-Powertrain	12	0	P	F	P	12.00
	Liquid fuels	1-13mpg		1	13	13.1	7.00
6. Fuel Economy	CNG	10-50 scf/mi	6	10	50	NA	0.00
	Hydrogen	15-98 cf/mi		15	98	NA	0.00
	Electric	1-3 kWh/mi		1	3	NA	0.00
7. Noise	Int. Noise (0-35 mph)	0.5	3	30	80	78.2	0.61
	Ext. Noise (0-35 mph)	0.5	3	50	83	76.3	1.11
	CO ₂	0-4000 g/mi	4	0	4000	658	4.34
	CO	0-20 g/mi	0.4	0	20	0.59	0.39
8. Emissions	Total hydrocarbon	1	0.4	0	3	0.02	0.40
	NMHC	0-3 g/mi	0.4	0	3	0.01	0.40
	Nitrogen oxides	0-3 g/mi	0.4	0	2	0.01	0.40
	Particulates	0-0.1 g/m	0.4	0	0.1	0	0.40
Total		60	40				92.9

Note: The use of the scoring system is not mandatory for procurement. It is only necessary that the bus being procured has received a passing score.

ABBREVIATIONS AND ACRONYMS

ABS	- anti-skid braking system
ABTC	- Altoona Bus Test Center
A/C	- air conditioner, or air conditioning
AC	- alternating current
ADA	- American Disability Act
CDCTS	- chassis dynamometer test control system
CVS	- constant volume sampling
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
DC	- direct current
DIR	- test director
DR	- bus driver
EPA	- Environmental Protection Agency
GAWR	- gross axle weight rating
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
HD-UDDS	- Heavy Duty-Urban Dynamometer Driving Schedule
LTi	- Larson Transportation Institute
mpg	- miles per gallon
mph	- miles per hour
PM	- Preventive maintenance
PSTT	- Penn State Test Track
rpm	- revolutions per minute
SAE	- Society of Automotive Engineers
SCF	- Standard cubic foot
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)
TD	- test driver
TECH	- test technician
TM	- track manager
TP	- test personnel
Wh	- Watt hour

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 consisted 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 certified 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 consisted of a BraunAbility / The Braun Corporation, 2020 Chrysler Pacifica/Voyager Commercial Wheelchair Accessible Vehicle with Rear-Entry Manual Foldout Ramp model bus. The bus has a front driver's door and front passenger door behind the front axle and curbside and streetside sliding passenger doors forward of the rear axle. The rear hatch is equipped with a BraunAbility / 503678A manual bi-fold ADA accessible ramp. Power is provided by a gasoline-fueled, FCA US LLC 3.6 L engine coupled to Chrysler OEM / 948TE transmission.

This test bus has a modified chassis. Per the manufacturer, the rear entry wheelchair accessible vehicle is modified by removing the center section of OEM vehicle floor from the rear hatch threshold up to the rear of front seats. A new lowered floor and frame structure is attached and welded in place to provide wheelchair users appropriate headroom, along with a manually operated tailgate and fold out ramp that is attached to the new frame structure for ingress/egress. Spacers are added between the vehicle body and suspension subframes to achieve appropriate ground clearance to the new lowered floor structure. Front driver and passenger seats retain their OEM floor level mounting and position.

The measured curb weight was 2,620 lb. for the front axle and 2,110 lb. for the rear axle. These combined weights provided a total measured curb weight of 4,730 lb. There are 4 seats including the driver and one wheelchair position, bringing the potential total passenger capacity to 5. There is no free floor space for standing passengers due to the vehicle type. Therefore, the gross load represents seated passengers only, for a total of 5 passengers. Gross load is calculated as $(150 \text{ lb.} \times 4) + (600 \text{ lb.} \times 1) = 1,200 \text{ lb.}$ At full declared capacity, the measured gross vehicle weight was 5,930 lb.

VEHICLE DATA FORM

Page 1 of 7

Bus Number: 2020-09	Date of Check-In: 09/28/2020
Bus Manufacturer: BraunAbility / The Braun Corporation	Vehicle Identification Number (VIN): 2C4RC1AG2LR177255
Model Number: 2020 Chrysler Pacifica /Voyager Commercial Wheelchair Accessible Vehicle with Rear-Entry Manual Foldout Ramp	Chassis Mfr./Mod. #: Chrysler Pacifica / Voyager
Personnel: S.R. & E.D.	Starting Odometer Reading: 56

WEIGHT:

Individual Wheel Reactions:

Weights (lb.)	Front Axle		Middle Axle		Rear Axle	
	Curb	Street	Curb	Street	Curb	Street
CW	1,260	1,360	N/A	N/A	1,070	1,040
SLW	1,390	1,490	N/A	N/A	1,530	1,520
GVW	1,390	1,490	N/A	N/A	1,530	1,520

Total Weight Details:

Weight (lb.)	CW	SLW	GVW	GAWR
Front Axle	2,620	2,880	2,880	2,950
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	2,110	3,050	3,050	3,200
Total	4,730	5,930	5,930	GVWR: 6,055 (Declared by Manufacturer)

Dimensions:

Length (ft/in)	16 / 10 ½
Width (in)	83 ¾
Height (in)	75 ¾
Front Overhang (in)	38 ½
Rear Overhang (in)	42
Wheelbase (in)	122
Wheel Track (in)	Front: 67.7
	Middle: N/A
	Rear: 68.1

VEHICLE DATA FORM

Page 2 of 7

Bus Number: 2020-09	Date: 09/28/2020

CLEARANCES:

Lowest Point Outside Front Axle	Location: Frame tube	Clearance(in): 7.7
Lowest Point Outside Rear Axle	Location: Wheelchair Frame	Clearance(in): 8.5
Lowest Point between Axles	Location: Cover Straps on fuel tank	Clearance(in): 7.5
Ground Clearance at the center (in)	7.5	
Front Approach Angle (deg)*	15.3	
Rear Approach Angle (deg)*	13.1	
Ramp Clearance Angle (deg)	7.0	
Aisle Width (in)	11.1	
Inside Standing Height at Center Aisle (in)	55.8	

*measurements used to calculate approach and departure angles are taken from the centerline of the axles.

BODY DETAILS

Body Structural Type	Unibody		
Frame Material	Steel		
Body Material	Steel		
Floor Material	Steel		
Roof Material	Steel		
Windows Type	☐ Fixed	☒ Movable	
Window Mfg./Model No.	Mopar / DOT865 FYG M-1232 AS3		
Number of Doors	<u>2</u> Front	<u>2</u> Middle	<u>1</u> Rear
Mfr. / Model No.	OEM to Mopar		
Dimension of Each Door (in)	Front Driver: 41.7 x 28.7 Front Passenger: 41.3 x 28.8 Streetside Middle: 43.3 x 26.8 Curbside Middle: 43.3 x 26.8 Rear Wheelchair: 56.4 x 34.7		
Passenger Seat Type	☐ Cantilever	☒ Pedestal	☐ Other (explain)
Driver Seat Type	☐ Air	☒ Spring	☐ Other (explain)
Mfr. / Model No.	OEM to Mopar		
Number of Seats (including Driver)	4 and 1 wheelchair		

VEHICLE DATA FORM

Page 3 of 7

Bus Number: 2020-09	Date: 09/28/2020

BODY DETAILS (Contd.)

Free Floor Space (ft ²)	N/A
Height of Each Step at Normal Position (in)	Front (Running Board) 1. <u>12.5</u> 2. <u>7.9</u> 3. <u>N/A</u>
	Middle (Running Board) 1. <u>13.7</u> 2. <u>8.8</u> 3. <u>N/A</u>
	Rear 1. <u>N/A</u> 2. <u>N/A</u> 3. <u>N/A</u> 4. <u>N/A</u>
Step Elevation Change - Kneeling (in)	N/A

ENGINE

Type	☐ C.I.	☐ Alternate Fuel	
	☒ S.I.	☐ Other (explain)	
Mfr. / Model No.	FCA US LLC / 3.6L		
Location	☒ Front	☐ Rear	☐ Other (explain)
Fuel Type	☒ Gasoline	☐ CNG	☐ Methanol
	☐ Diesel	☐ LNG	☐ Other (explain)
Alternator (Generator) Mfr./Model No.	Denso / TN421000-7181 P56029732 AB		
Maximum Rated Output (Volts / Amps)	12 / 180		
Air Compressor Mfr. / Model No.	N/A		
Maximum Capacity (ft ³ / min)	N/A		
Starter Type	☒ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Mopar / TN438000-4562		

VEHICLE DATA FORM

Page 4 of 7

Bus Number: 2020-09	Date: 09/28/2020

TRANSMISSION

Transmission Type	☐ Manual	☒ Automatic	☐ Load Sensing Adaptive
Mfr. / Model No.	OEM Chrysler / 948TE		
Control Type	☐ Mechanical	☒ Electrical	☐ Other
Integral Retarder Mfr. / Model No.	☐ Yes	☒ No	

SUSPENSION

Number of Axles	2		
Front Axle Type	☒ Independent	☐ Beam Axle	
Mfr. / Model No.	Chrysler / OEM		
Axle Ratio (if driven)	Not available - Chrysler / OEM		
Suspension Type	☐ Air	☒ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	ZF / REG 001650 / 2018		
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.	Chrysler / OEM		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☒ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	ZF / REG 001649 / 2018		

VEHICLE DATA FORM

Page 5 of 7

Bus Number: 2020-09	Date: 09/28/2020

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Chrysler / OEM
	Tire Mfr./ Model No.	Yokohama / Avid S34 235/65R17
Rear	Wheel Mfr./ Model No.	Chrysler / OEM
	Tire Mfr./ Model No.	Yokohama / Avid S34 235/65R17

BRAKES

Front Axle Brakes Type	☐ Cam	☒ Disc	☐ Other (explain)
Mfr. / Model No.	Mopar / OEM		
Middle Axle Brakes Type	☐ Cam	☐ Disc	☐ Other
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	☐ Cam	☒ Disc	☐ Other (explain)
Mfr. / Model No.	Mopar / OEM		

HVAC

Heating System Type	☐ Air	☒ Water	☐ Other
Capacity (Btu/hr)	Not Available – Chrysler / OEM		
Mfr. / Model No.	Chrysler / OEM		
Air Conditioner	☒ Yes	☐ No	
Location	Front		
Capacity (Btu/hr)	Not Available – Chrysler / OEM		
A/C Compressor Mfr. / Model No.	FCA US LLC / 68225206 AD / 46177G		

STEERING

Steering Gear Box Type	Hydraulic Rack & Pinion		
Mfr. / Model No.	Chrysler / OEM		
Steering Wheel Diameter	15.2"		
Number of turns (lock to lock)	3		
Control Type	☐ Electric	☒ Hydraulic	☐ Other (explain)

VEHICLE DATA FORM

Page 6 of 7

Bus Number: 2020-09	Date: 09/28/2020

OTHERS

Wheelchair Ramps	Location: Rear hatch	Type: Manual Bi-fold ramp
Wheelchair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	BraunAbility / 503678A	
Emergency Exit	Location: N/A	Number: N/A

CAPACITIES

Fuel Tank Capacity (gallons)	20
Engine Crankcase Capacity (quarts)	5
Transmission Capacity (pints)	12.7
Differential Capacity (quarts)	Integral with transmission
Cooling System Capacity (gallons)	Not Available – Chrysler / OEM
Power Steering Fluid Capacity (quarts)	Not Available – Chrysler / OEM

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Date: 09/28/2020

List all spare parts, tools and manuals delivered with the bus.

[illegible]

COMPONENT/SUBSYSTEM INSPECTION FORM

Page 1 of 1

Bus Number: 2020-09	Date: 09/28/2020

Subsystem	Checked	Initials	Comments
Air Conditioning Heating and Ventilation	✓	E.D.	None noted.
Body and Sheet Metal	✓	E.D.	None noted.
Frame	✓	E.D.	None noted.
Steering	✓	E.D.	None noted.
Suspension	✓	E.D.	None noted.
Interior/Seating	✓	E.D.	None noted.
Axles	✓	E.D.	None noted.
Brakes	✓	E.D.	None noted.
Tires/Wheels	✓	E.D.	None noted.
Exhaust	✓	E.D.	None noted.
Fuel System	✓	E.D.	None noted.
Power Plant	✓	E.D.	None noted.
Accessories	✓	E.D.	None noted.
ADA Accessible Lift System	N/A	E.D.	N/A
ADA Accessible Ramp System	✓	E.D.	None noted.
Interior Fasteners	✓	E.D.	None noted.
Batteries	✓	E.D.	None noted.

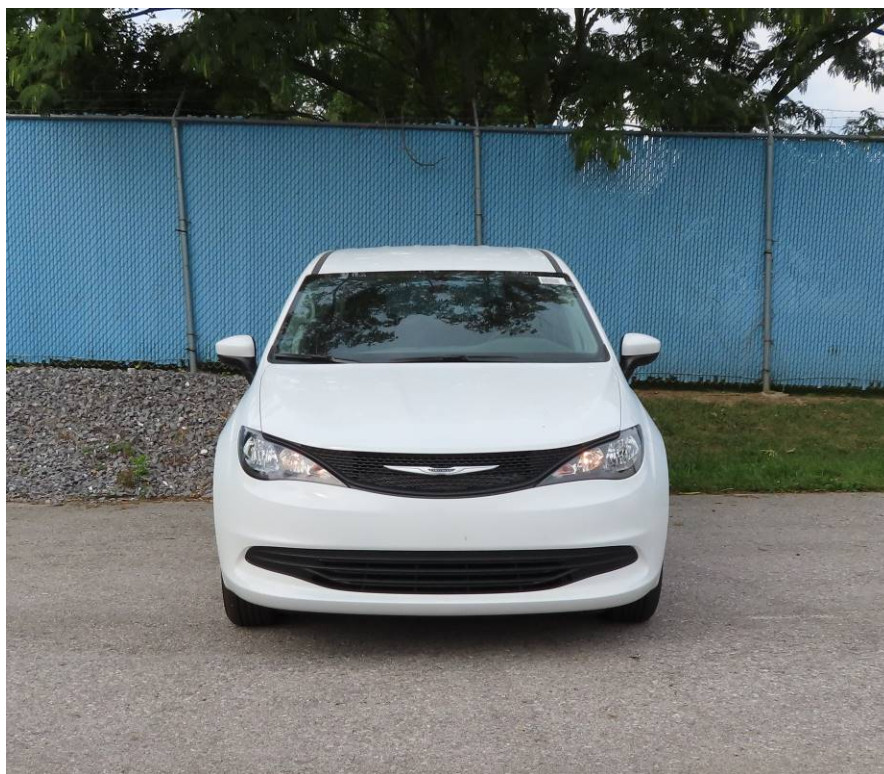
CHECK - IN



**BRAUNABILITY / THE BRAUN CORPORATION 2020
CHRYSLER PACIFICA / VOYAGER COMMERCIAL
WHEELCHAIR ACCESSIBLE VEHICLE WITH REAR-ENTRY
MANUAL FOLDOUT RAMP**



CHECK - IN CONT.



BRAUNABILITY / THE BRAUN CORPORATION 2020 CHRYSLER PACIFICA / VOYAGER COMMERCIAL WHEELCHAIR ACCESSIBLE VEHICLE WITH REAR-ENTRY MANUAL FOLDOUT RAMP



CHECK - IN CONT.



**BRAUNABILITY 503678A MANUAL BI-FOLD
ADA ACCESSIBLE RAMP**

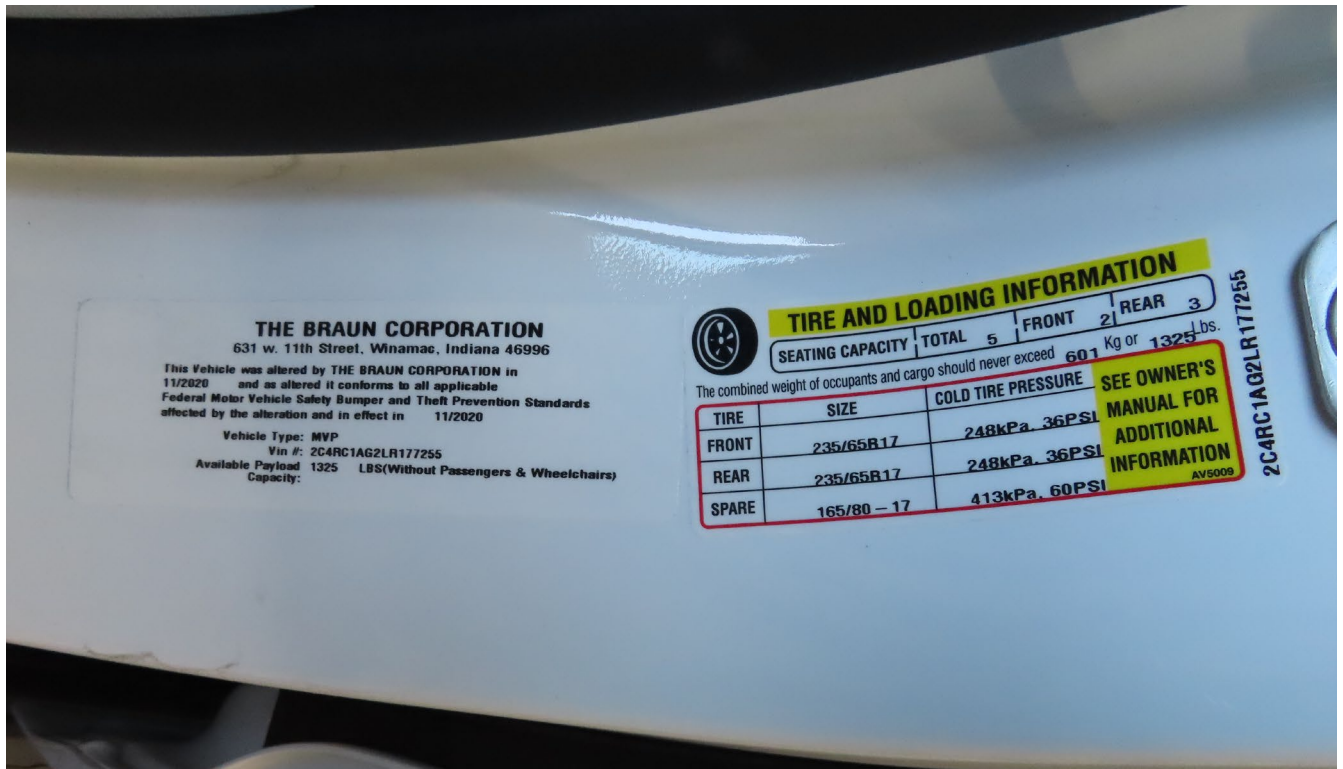


OPERATOR'S AREA

CHECK - IN CONT.



INTERIOR FROM REAR



VIN TAG

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 was checked, and where accessibility was restricted the subsystem was 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 in general found to be readily accessible and no restrictions were noted. However, some components were not easily removable and are noted on the following two pages.

ACCESSIBILITY DATA FORM

Page 1 of 2

Bus Number: 2020-09	Date: 12/17/2020

Component	Checked	Comments
ENGINE:		
Oil Dipstick	✓	No additional notes.
Oil Filler Hole	✓	No additional notes.
Oil Drain Plug	✓	No additional notes.
Oil Filter	✓	No additional notes.
Fuel Filter	✓	N/A
Air Filter	✓	No additional notes.
Belts	✓	No additional notes.
Coolant Level	✓	No additional notes.
Coolant Filler Hole	✓	No additional notes.
Coolant Drain	✓	No additional notes.
Spark / Glow Plugs	✓	Intake removal for front plugs
Alternator	✓	Remove catalytic converter / A/C Compressor to access
Diagnostic Interface Connector	✓	No additional notes.
TRANSMISSION:		
Fluid Dipstick	✓	N/A
Filler Hole	✓	Have to remove battery box / air filter to access
Drain Plug	✓	No additional notes.
SUSPENSION:		
Bushings	✓	No additional notes.
Shock Absorbers	✓	Has lift kit installed
Air Springs	✓	N/A
Leveling Valves	✓	N/A
Grease Fittings	✓	N/A

ACCESSIBILITY DATA FORM

Page 2 of 2

Bus Number: 2020-09	Date: 12/17/2020

Component	Checked	Comments
HVAC:		
A/C Compressor	✓	Remove catalytic convertor to access
Filters	✓	Behind glove box
Fans	✓	Behind glove box
ELECTRICAL SYSTEM:		
Fuses	✓	Under hood
Batteries	✓	Two batteries
Voltage regulator	✓	Built into alternator
Voltage Converters	✓	None
Lighting	✓	No additional notes
MISCELLANEOUS:		
Brakes	✓	No additional notes.
ADA Accessible Lifts/Ramps	✓	No additional notes.
Instruments	✓	No additional notes.
Axles	✓	No additional notes.
Exhaust	✓	No additional notes.
Fuel System	✓	Fuel tank relocated.
OTHERS:		
Starter	✓	Remove catalytic convertor to access

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 was conducted by operating the bus and collecting the following data on work order forms and a driver log.

1. Scheduled Maintenance
 - a. Bus number
 - b. Date
 - c. Mileage
 - d. Results of scheduled inspections
 - e. Description of malfunction (if any)
 - f. Repair action and parts used (if any)
 - g. Man-hours required

2. Unscheduled Maintenance
 - a. Bus number
 - b. Date
 - c. Mileage
 - d. Description of malfunction
 - e. Place and time of malfunction (e.g., in service or undergoing inspection)
 - f. Repair action and parts used
 - g. Man-hours required

The bus was operated in accelerated durability service. While typical items are given below, the specific service schedule was 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 manufacturer recommended) 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

*These items are attended to if found necessary, while the others in the list are removed/replaced/tested for all buses undergoing a full test.

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.

The Unscheduled Maintenance List along with 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 was detected, a description of the malfunction and repair, and the time required to perform the repair.

(Page 1 of 1)

SCHEDULED MAINTENANCE

BraunAbility / The Braun Corporation Bus# 2020-09

DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	LABOR HOURS
10/09/20	614	P.M./Inspection	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension.	4.00	4.00
10/22/20	2,025	P.M./Inspection	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension.	4.00	4.00
11/03/20	2,601	P.M./Inspection Fuel Economy	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension. Oil changed. Oil, fuel, and air filters changed.	8.00	8.00
11/17/20	3,431	P.M./Inspection	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension.	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 involved components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that failed during testing of the bus was added to this list. Components to be included are:

1. Engine/Transaxle
2. Wiper Motor
3. Starter
4. Alternator
5. Batteries

1.3-III. DISCUSSION

At the end of the test, the items on the list were removed and replaced. The engine/transaxle assembly took 10.00 labor-hours (2 persons @ 5.00 hrs) to remove and replace. The time required for repair/replacement of the other four components is given on the following Repair and/or Replacement Form.

REPLACEMENT AND/OR REPAIR FORM

Subsystem	Replacement Time
Engine / Transaxle	10.00 labor hours
Wiper Motor	1.00 labor hours
Starter	3.00 labor hours
Alternator	3.00 labor hours
Batteries	0.80 labor hours

The catalytic converter and A/C compressor must be removed to access the alternator and starter motor.

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS



**ENGINE / TRANSAXLE REMOVAL AND REPLACEMENT
(10.00 LABOR HOURS)**



**WIPER MOTOR REMOVAL AND REPLACEMENT
(1.00 LABOR HOURS)**

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.

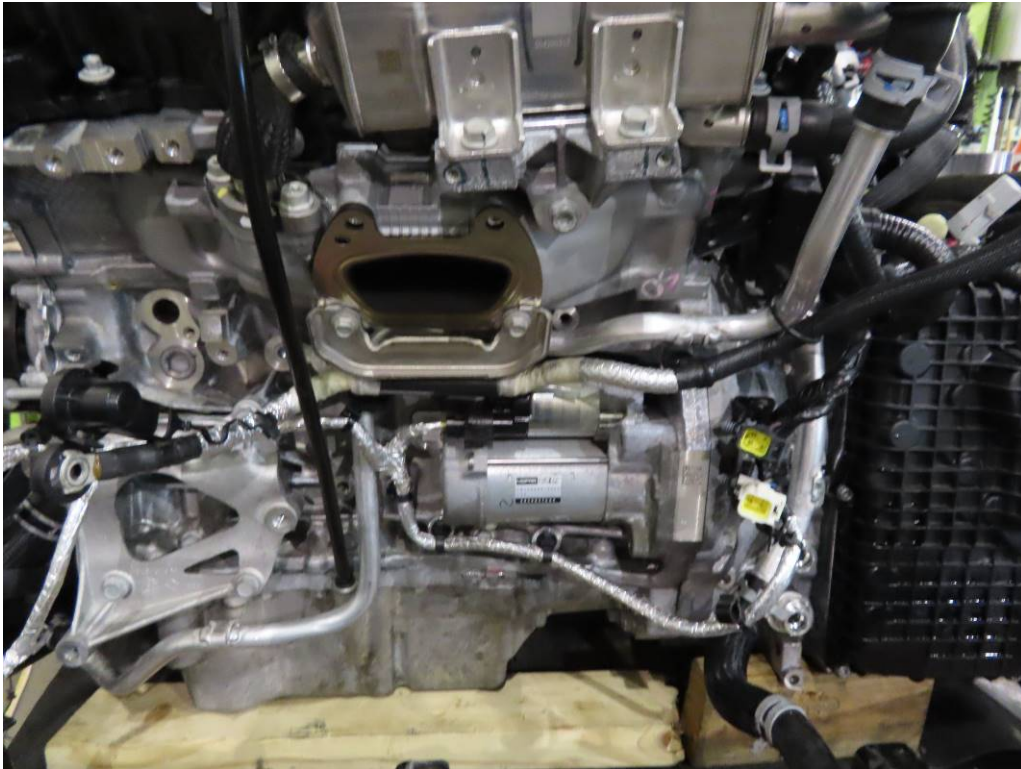


**STARTER AND CATALYTIC CONVERTER REMOVAL AND REPLACEMENT
(3.00 LABOR HOURS)**



**ALTERNATOR REMOVAL AND REPLACEMENT
(3.00 LABOR HOURS)**

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.



STARTER LOCATION (CONVERTER REMOVED)

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, labor-hours to repair, and hours out of service were 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 Injury, a crash and/or significant physical damage.
- (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 was accumulated during the Structural Durability Test. The following Reliability Data Form lists all unscheduled repairs under classes as defined above.

The classification of repairs according to subsystem is intended to emphasize those systems which had persistent minor or more serious problems. This bus had no reported failures.

This bus passed the Structural and Powertrain Durability sections of the test.

RELIABILITY DATA FORMS

Bus Number: 2020-09	Date: 12-07-2020
Personnel: B.L.	

	Failure Type					
	Class 4 Bad Order	Class 3 Bus Change	Class 2 Road Call	Class 1 Physical Safety		
Subsystems	Mileage	Mileage	Mileage	Mileage	Labor Hours	Down Time
	--No Failures to Report--					

3.1 SAFETY - A DOUBLE-LANE CHANGE (OBSTACLE AVOIDANCE)

3.1-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.

3.1-II. TEST DESCRIPTION

The Safety Test consisted of an obstacle avoidance maneuver to evaluate the handling and stability of the bus. The test was conducted at the LTI test track on the vehicle dynamics pad. The bus was driven through a double-lane change course at increasing speeds until the test was determined to be unsafe or a speed of 45 mph is reached. The test is determined unsafe if vehicle handling becomes unstable or if any of the tires lose contact with the pavement.

The layout of the test course was defined by placing pylons along painted guidelines that delineated the course. The guidelines marked off two 12-foot center-to-center lanes. Each lane had two 80 foot long gates with a spacing distance of 80 feet between them. The bus entered the test course in one lane, crossed over to the other lane within the 80 foot gate, traveled for 80 feet, and then returned back into the original lane within the next 80 foot gate. This maneuver was repeated from 20 mph with speed increasing in increments of 5 mph. The test was performed starting from both the right and left lanes.

A test run is considered valid if the bus is able to perform the maneuver at a constant speed without deviating from the test course or striking pylons. If the bus is not able to successfully complete the maneuver due to vehicle instability, the test will be terminated. The highest speed at which the maneuver can be successfully performed up to a maximum speed of 45 mph is recorded on the Safety Data Form.

3.1-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, and therefore, passed this portion of the test.

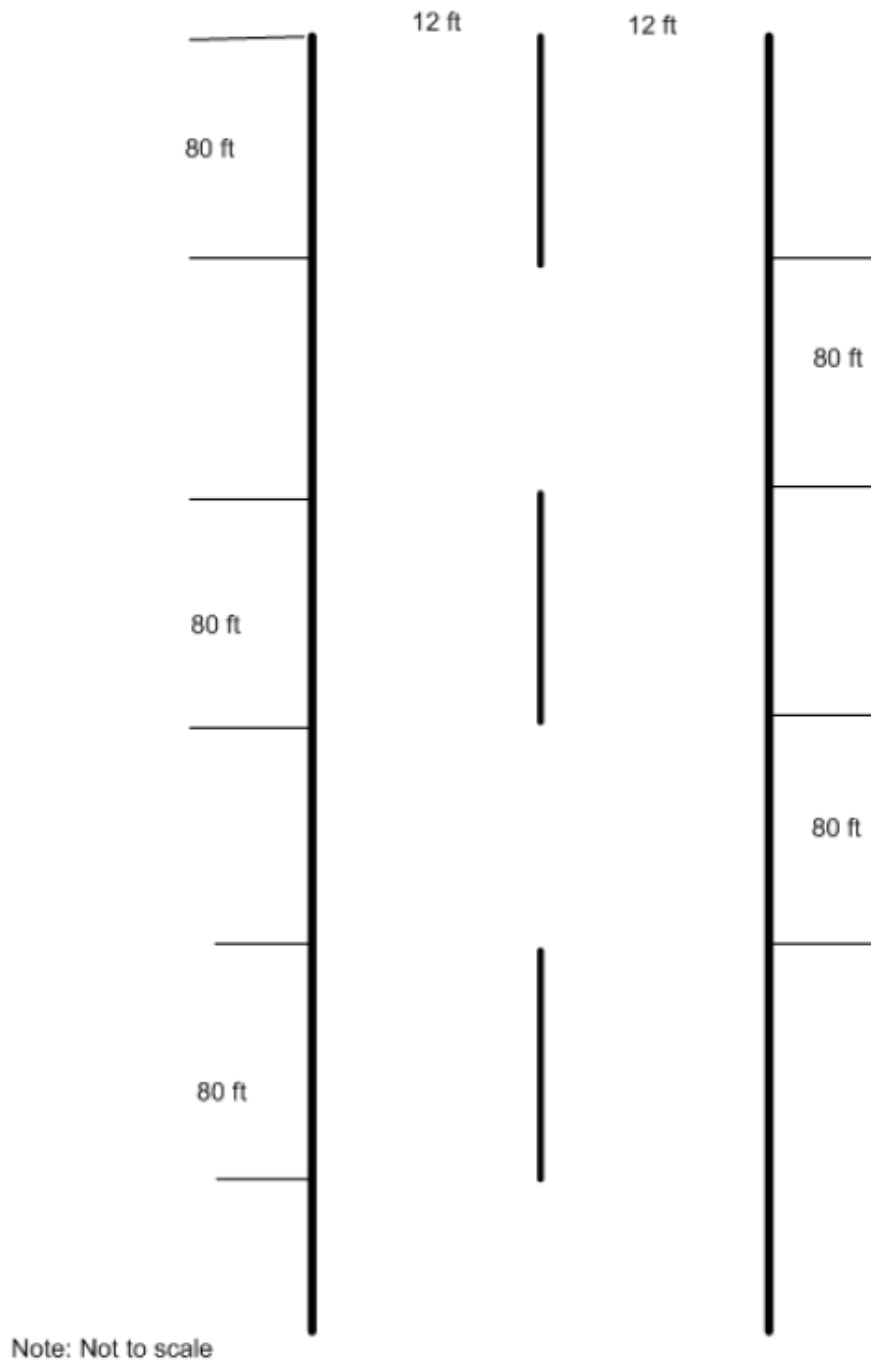


Figure 3.1. Double lane change test course.

SAFETY DATA FORM

Page 1 of 1

Bus Number: 2020-09	Date: 10/21/2020
Personnel: S.R. & E.D.	

Temperature (°F): 68	Humidity (%): 80
Wind Direction: SW	Wind Speed (mph): 7
Barometric Pressure (inHg): 30.06	

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 bus maintained a safe profile throughout all portions of testing.	
Comments of the tire/ground contact patch:	
The bus maintained the tire/ground patch throughout all portions of testing.	

3.1 SAFETY



RIGHT - HAND APPROACH



LEFT - HAND APPROACH

3.2 Safety - Braking

3.2 I. TEST OBJECTIVE

The objective of this test is to provide, for comparison purposes, braking performance data on transit buses produced by different manufacturers.

3.2 II. TEST DESCRIPTION

The testing was conducted at the LTI Test Track skid pad area. Brake tests were 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. For buses that have not completed Durability Testing, the brakes will be burnished according to the test procedure. Testing was performed when the bus was fully loaded at its GVW. All tires on each bus were representative of the tires on the production model vehicle and inflated to the bus manufacturer's specified pressures.

The brake testing procedure is comprised of 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

3.2-III. DISCUSSION

The results of the Stopping Distance phase of the Brake Test are available in table 3.2-2. There was no deviation from the test lane during the performance of the Stopping Distance phase. The bus passed this portion of the test.

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.

This bus passed all three phases of the Safety –Braking Test.

Table 3.2-1. Braking Test Data Forms

Page 1 of 3

Bus Number: 2020-09	Date: 10/14/2020
Personnel: S.R. & E.D.	
Amb. Temperature (°F): 60	Wind Speed (mph): 6
Wind Direction: WSW	Pavement Temp (°F) Start: 59.6 End: 72.6

TIRE INFLATION PRESSURE (psi):				
Tire Type: Front: Yokohama AVID S34 235 65R 17				
Rear: Yokohama AVID S34 235 65R 17				
	Left Tire(s)		Right Tire(s)	
Front	36		36	
	Inner	Outer	Inner	Outer
Middle	N/A	N/A	N/A	N/A
Rear	N/A	36	N/A	36

AXLE LOADS (lb.)		
	Left	Right
Front	1,490	1,390
Middle	N/A	N/A
Rear	1,520	1,530

Table 3.2-2. Stopping Distance Test Results Form
(longest stopping distance in each test condition in bold)

Stopping Distance (ft)					
Vehicle Direction	CW	CW	CCW	CCW	
Speed (mph)	Stop 1	Stop 2	Stop 3	Stop 4	Average
20 (dry)	21.28	21.09	19.08	20.17	20.41
30 (dry)	45.42	45.06	39.52	43.16	43.29
40 (dry)	72.09	69.14	70.19	71.93	70.84
45 (dry)	88.56	80.78	83.93	85.60	84.72
20 (wet)	24.46	21.72	21.56	21.22	22.24

Table 3.2-3. Stability Test Results Form

Stability Test Results (Split Friction Road surface)			
Vehicle Direction	Attempt	Did test bus stay in 12' lane? (Yes/No)	Comments
Driver side on high friction	1	Yes	None noted.
	2	Yes	None noted.
Driver side on low friction	1	Yes	None noted.
	2	Yes	None noted.

Table 3.2-4. Parking Brake Test Form

PARKING BRAKE (GVW) – GRADE HOLDING						
Vehicle Direction	Attempt	Hold Time (min)	Slide (in)	Roll (in)	Did Hold	No Hold
Front up	1	5:00	0	0	✓	
	2	N/A	N/A	N/A		
	3	N/A	N/A	N/A		
Front down	1	5:00	0	0	✓	
	2	N/A	N/A	N/A		
	3	N/A	N/A	N/A		

Table 3.2-5. Record of All Braking System Faults/Repairs.

Date	Fault/Repair	Description
10/14/2020	None noted.	None noted.

3.2 Safety - Bus Braking



**PARKING BRAKE TEST
PARKING BRAKE HELD FOR 5 MINUTES IN
BOTH 20% UP AND 20% DOWN POSITIONS**



4. PERFORMANCE - AN ACCELERATION, GRADEABILITY, AND TOP SPEED TEST

4-I. TEST OBJECTIVE

The objective of this test is to determine the acceleration, gradeability, and top speed capabilities of the bus.

4-II. TEST DESCRIPTION

In this test, the bus was operated at SLW on a chassis dynamometer. The procedure dictates that the test bus be accelerated to a maximum “power-limited”/“governed” or maximum “safe” speed not exceeding 80 mph. The maximum power-limited/governed speed, if applicable, is the top speed as limited by the engine control system. The maximum safe speed is defined as the maximum speed that the dynamometer, the tires or other bus components are limited to. The test vehicle speed was measured using a speed encoder built in the chassis dynamometer. The time intervals between 10 mph increments were recorded using a Data Acquisitions System. Time-speed data and the top speed attained were recorded on the Performance Data Form. The recorded data was used to generate a percent grade versus speed table and a speed versus time curve. All the above are available in the following pages.

4-III. DISCUSSION

This test consisted of three runs from standstill to full throttle on the chassis dynamometer. Speed versus time data was obtained for each run and results are averaged to minimize test variability. The test was performed up to a maximum safe speed of 80.0 mph. The calculated gradeability results are attached. The average time to reach 30 mph was 4.7 seconds. The maximum gradeability at 10 mph was 41.0% and at 40 mph was 22.9%. This bus passed this section of the test.

PERFORMANCE DATA FORM

Page 1 of 1

Bus Number: 2020-09		Date: 11/05/2020	
Personnel: S.B. & S.I.			
Temperature (°F): 76.6		Humidity (%): 29	
Barometric Pressure (inHg): 29.0			
		INITIALS:	
Air Conditioning - OFF	✓Checked	S.B.	
Heater pump motor - OFF	✓Checked	S.B.	
Defroster - OFF	✓Checked	S.B.	
Exterior and interior lights - ON	✓Checked	S.B.	
Windows and doors - CLOSED	✓Checked	S.B.	
ACCELERATION, GRADEABILITY, TOP SPEED			
Recorded Interval Times			
Speed	Run 1	Run 2	Run 3
10 mph	2.1	2.2	2.0
20 mph	3.2	3.4	3.4
30 mph	4.5	4.8	4.8
40 mph	6.2	6.5	6.5
50 mph	8.2	8.6	8.7
60 mph	10.8	11.3	11.5
70 mph	14.3	15.0	15.3

Maximum Speed (mph): 80.0 (maximum safe dynamometer speed reached)

PERFORMANCE SUMMARY SHEET

Bus Number: 2020-09	Date: 11/05/2020
Personnel: S.B. & S.I.	

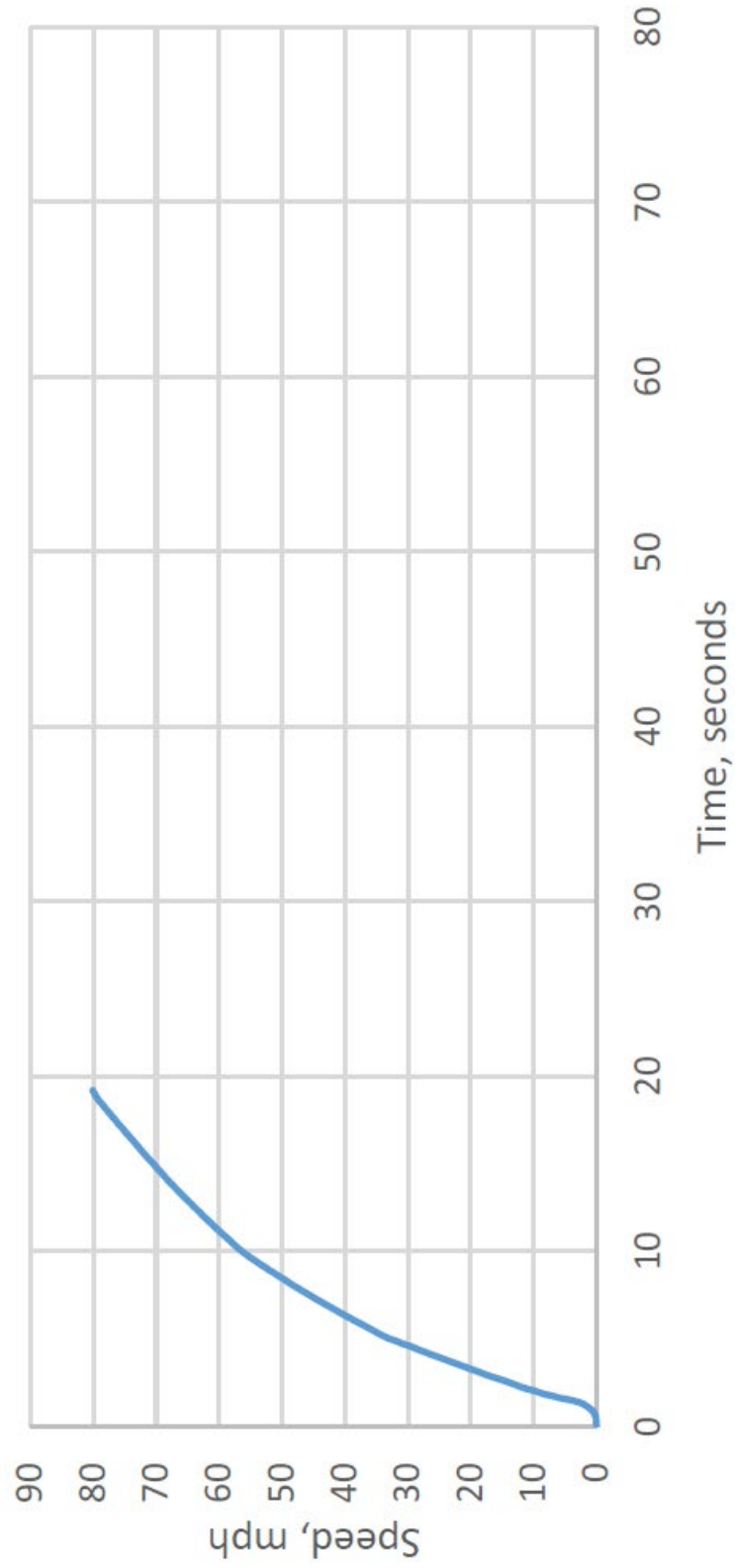
Test Conditions:

Temperature (°F): 76.6	Humidity (%): 29
Barometric Pressure (inHg): 29.0	

Test Results:

Vehicle Speed (MPH)	Time (SEC)	Acceleration (FT/SEC^2)	Max. Grade (%)
1.0	1.0	6.60	20.5
5.0	1.6	12.32	38.3
10.0	2.1	13.20	41.0
15.0	2.7	11.85	36.8
20.0	3.3	11.20	34.8
25.0	4.0	10.96	34.0
30.0	4.7	10.22	31.7
35.0	5.4	8.40	26.1
40.0	6.4	7.36	22.9
45.0	7.4	6.91	21.5
50.0	8.5	6.49	21.5
55.0	9.7	5.55	20.2
60.0	11.2	4.40	17.2
65.0	12.9	4.09	13.7
70.0	14.9	3.64	12.7
75.0	16.9	3.48	11.3
80.0	19.2	Maximum Speed	

BraunAbility Bus 2020-09



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 GVW, each wheel of the bus was raised (one at a time) to simulate operation over a curb and the following were 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 was then 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, steering and ADA accessible devices 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. This bus passed this section of the test.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Page 1 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 2 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 3 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 4 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 5 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 6 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

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Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

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Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

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Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 10 of 10

Bus Number: 2020-09	Date: 09/29/2020
Personnel: T.S., S.R., E.D., E.L., T.G. & P.D.	Temperature(°F): 66

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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



LEFT REAR WHEEL SIX INCHES LOWER



RIGHT REAR WHEEL SIX INCHES HIGHER

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 was used to apply a static tension load equal to 1.2 times the bus curb weight. The load was 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 was recorded.

5.3-III. DISCUSSION

The test bus submitted for testing was not equipped with any type of tow eyes or tow hooks. Therefore, the static towing test was not performed. This bus is deemed to pass this section of the test, but no points were allotted for this section.

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 required the bus to be towed at curb weight using the specified equipment and instructions provided by the manufacturer and a heavy-duty wrecker. The bus was towed for 5 miles at a speed of 20 mph for each recommended towing configuration. After releasing the bus from the wrecker, the bus was visually inspected for any structural damage or permanent deformation. All doors, windows and passenger escape mechanisms were 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. No problems, deformation, or damage was noted during testing. This bus passed this section of the test.

DYNAMIC TOWING TEST DATA FORM

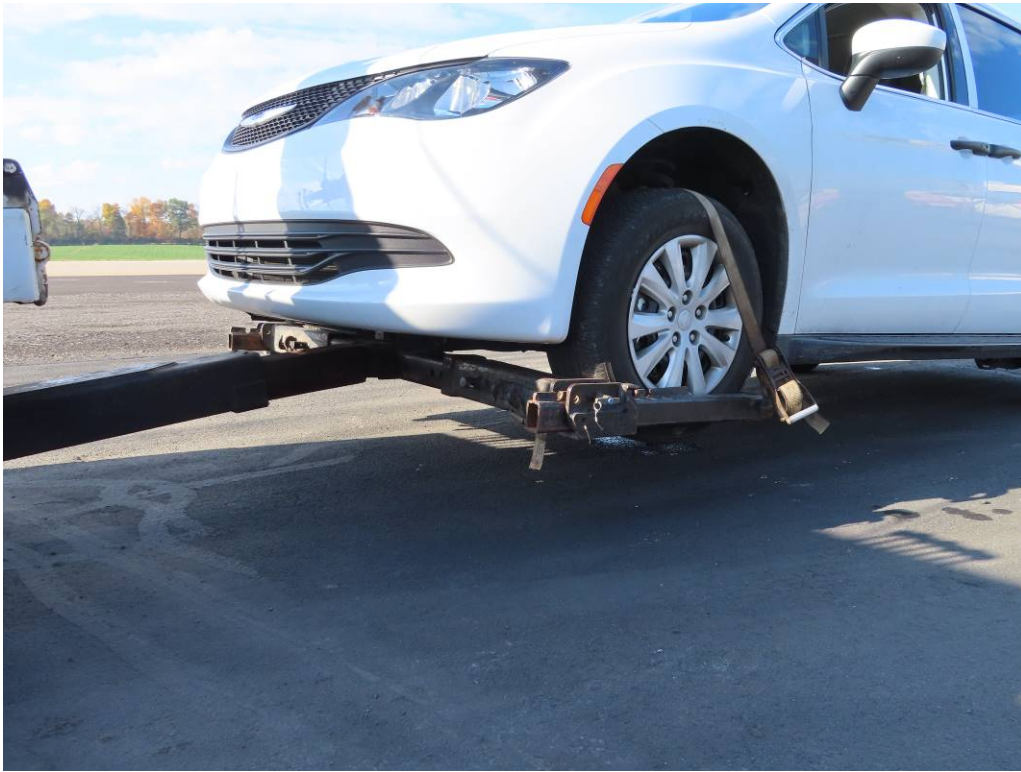
Page 1 of 1

Bus Number: 2020-09	Date: 10/23/2020
Personnel: E.D., E.L. & P.D.	

Temperature (°F): 65	
Wind Direction: N/A	Wind Speed (mph): 0

Inspect tow equipment-bus interface.
Comments: An adequate connection was made between tow equipment and bus using a wheel lift.
Inspect tow equipment-wrecker interface.
Comments: An adequate connection was made between tow equipment and wrecker.
Towing Comments: A full tow was accomplished.
Description and location of any structural damage: None noted.
General Comments: None 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 were replaced with deflated tire(s) of the appropriate type. A portable hydraulic floor jack was 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) were replaced with the original tire(s) and the jack was lowered. Any structural damage or permanent deformation was recorded on the test data sheet. This procedure was repeated for each corner of the bus.

5.5-III. DISCUSSION

During the deflated tire portion of the test, the jacking point clearances ranged from 5.4 inches to 8.5 inches. No deformation or damage was observed during testing. A complete listing of jacking point clearances is provided in the Jacking Test Data Form. This bus passed this section of the test.

JACKING CLEARANCE SUMMARY

Condition	Frame Point Clearance
Front axle – one tire flat	5.6
Rear axle – one tire flat	8.4
Rear axle – two tires flat	N/A

JACKING TEST DATA FORM

Page 1 of 1

Bus Number: 2020-09	Date: 09/28/2020
Personnel: S.R. & E.D.	Temperature (°F): 79

Record any permanent deformation or damage to bus as well as any difficulty encountered during jacking procedure.

I= Inflated D= Deflated

Deflated Tire	Jacking Pad Clearance Body/Frame (in)	Jacking Pad Clearance Axle/Suspension (in)	Comments
Right front	7.8" I 5.6" D	8.8" I 7.0" D	Body & Axle
Left front	8.0" I 5.7" D	9.2" I 7.2" D	Body & Axle
Right rear—outside	11.1" I 8.5" D	7.8" I 5.4" D	Body & Suspension
Right rear—both	N/A	N/A	N/A
Left rear—outside	10.7" I 8.4" D	7.5" I 5.4" D	Body & Suspension
Left rear—both	N/A	N/A	N/A
Right middle or tag—outside	N/A	N/A	N/A
Right middle or tag—both	N/A	N/A	N/A
Left middle or tag—outside	N/A	N/A	N/A
Left middle or tag—both	N/A	N/A	N/A
Additional comments of any deformation or difficulty during jacking:			
None noted.			

5.5 JACKING TEST



JACK IN PLACE – FRONT



JACK IN PLACE – REAR

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 was 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 was checked for stability on the jack stands and for any damage to the jacking pads or bulkheads. The procedure was repeated for the tag/middle axles (if equipped), and rear end of the bus. The procedure was then repeated for the front, tag/middle (if equipped) axles, and rear simultaneously.

5.6-III. DISCUSSION

The test was conducted using four posts of a six-post electric lift and 19-inch jack stands. The bus was hoisted from the front wheels and then from the rear wheels, and then from the front and rear wheels simultaneously and placed on jack stands.

The bus accommodated the placement of the vehicle lifts and jack stands and the procedure was performed without any instability noted. This bus passed this section of the test.

HOISTING TEST DATA FORM

Page 1 of 1

Bus Number: 2020-09	Date: 09/28/2020
Personnel: S.R. & E.D.	Temperature (°F): 79

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 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.

5.6 HOISTING TEST



JACK STANDS IN PLACE – REAR



JACK STANDS IN PLACE – FRONT AND REAR

5.7 STRUCTURAL DURABILITY TEST

5.7-I. TEST OBJECTIVE

The objective of this test is to perform an accelerated durability test that approximates 25 percent of the service life of the vehicle.

5.7-II. TEST DESCRIPTION

The test vehicle was driven a total of 3,800 miles; approximately 2,500 miles on the LTI Durability Test Track and approximately 1,300 miscellaneous other miles. The test was conducted with the bus operated under three different loading conditions. The first segment consisted of approximately 1,500 miles with the bus operated at GVW. The second segment consisted of approximately 800 miles with the bus operated at SLW. The remainder of the test, approximately 1,500 miles, was conducted with the bus loaded to CW. The loads on both axles and GVW were within their ratings with the bus loaded as specified by the manufacturer. All subsystems were running during these tests in their normal operating modes. All manufacturer-recommended servicing was followed and noted on the vehicle maintainability log. Servicing items accelerated by the durability tests were compressed by 10:1; all others were done on a 1:1 mi/mi basis. Unscheduled breakdowns and repairs were recorded on the same log as are any unusual occurrences as noted by the driver. Once a week the test vehicle was washed down and thoroughly inspected for any signs of failure.

5.7-III. DISCUSSION

The Structural Durability Test was started on October 2, 2020 and was conducted until November 20, 2020. The first 1,500 miles were performed at a GVW of 5,930 lb. and completed on October 14, 2020. The next 800-mile SLW segment was performed at 5,930 lb. and completed on October 23, 2020 and the final 1,500-mile segment was performed at a CW of 4,730 lb. and completed on November 20, 2020.

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 LTI 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. This bus passed this section of the test, as there were no uncorrected Class 1 or Class 2 failures and the unscheduled maintenance of zero hours was less than 125 hours.

BraunAbility / The Braun Corporation Bus # 2020-09
MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
09/28/20 TO 10/04/20	128.00	50.00	178.00
10/05/20 TO 10/11/20	514.00	22.00	536.00
10/12/20 TO 10/18/20	513.00	299.00	812.00
10/19/20 TO 10/25/20	366.00	369.00	735.00
10/26/20 TO 11/01/20	324.00	62.00	386.00
11/02/20 TO 11/08/20	108.00	59.00	167.00
11/09/20 TO 11/15/20	502.00	22.00	524.00
11/16/20 TO 11/22/20	45.00	418.00	463.00
Total	2500.00	1301.00	3801.00

Driving Schedule for Bus Operation on the Durability Test Track.

STANDARD OPERATING SCHEDULE

Monday through Friday

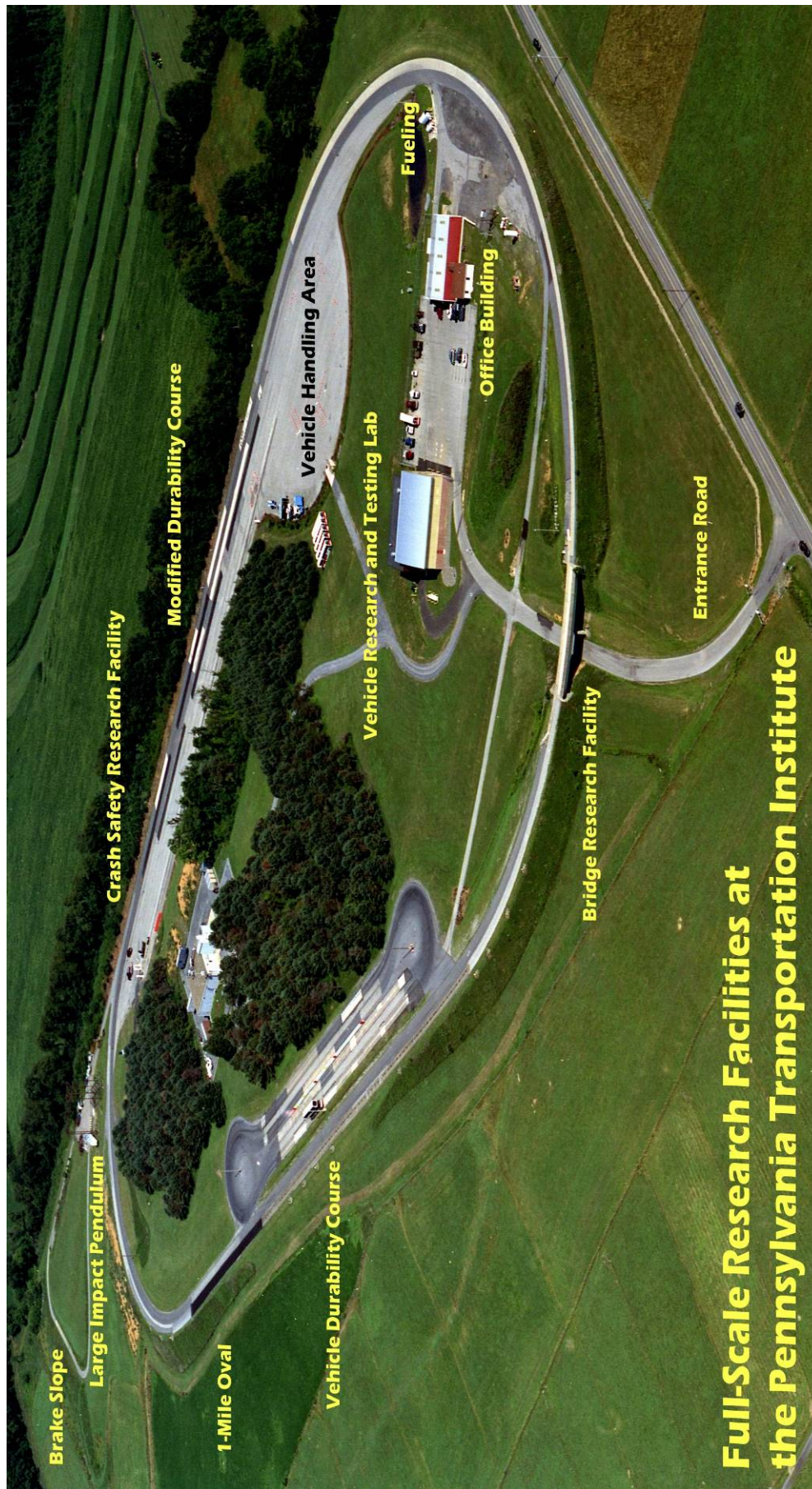
	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 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

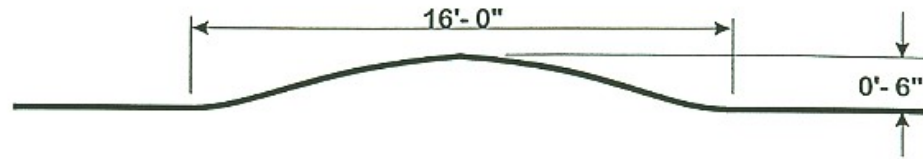
D—Drive bus as specified by procedure

F—Fuel bus, complete driver's log shift entries

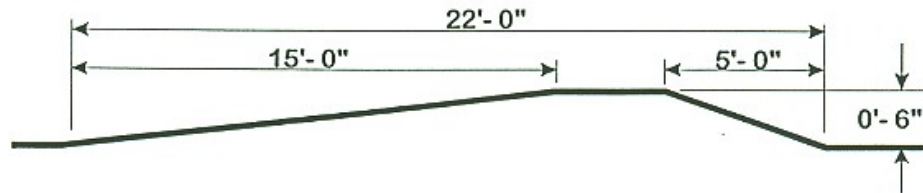




Staggered
Bumps
(10 mph)



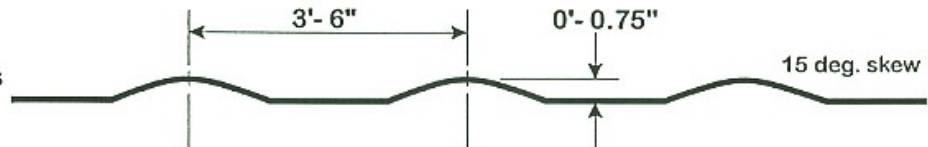
Railroad
Crossing
(8 mph)



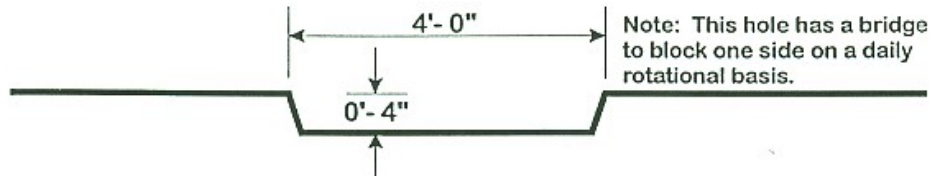
1" Random
Chuck Holes
(20 mph)



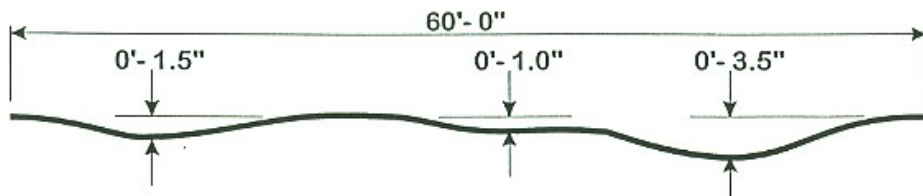
Chatter Bumps
(20 mph)



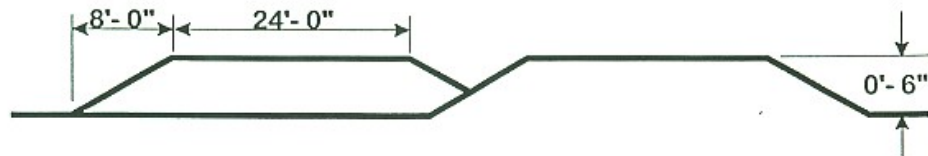
4" Chuck Hole
(5 mph)



High Crown
Intersection
(20 mph)



Frame Twist
(10 mph)



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

Unscheduled Maintenance
BraunAbility / The Braun Corporation Bus #2020-09
(Page 1 of 1)

Date	Test Miles	Issue	Action	Labor Hours	Sub- system	Class
			--No Unscheduled Maintenance Repairs to Report--			

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 operating profile, under specified operating conditions that are typical of transit bus operation. The results of this test may not represent actual mileage in transit service but will provide data that can be used by FTA Grantees to compare the efficiency of buses tested using this procedure.

6-II. TEST DESCRIPTION

This test was 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 driving cycles are the Manhattan cycle, a low average speed, highly transient urban cycle (Figure 1), the Orange County Bus Cycle, a medium average speed transient urban cycle (Figure 2), and the EPA HD-UDDS Cycle, which consists of urban and highway driving segments (Figure 3). A fuel economy test was comprised of two runs for the three different driving cycles, and the average value was reported.

The test procedure for liquid-fueled buses such as this one uses a calibrated flowmeter system and/or a calibrated fuel weighing scale. The flowmeter system utilizes a precise four-piston positive displacement flow meter. The weighing scale system includes heat exchangers to maintain temperature in diesel and common-rail injection systems.

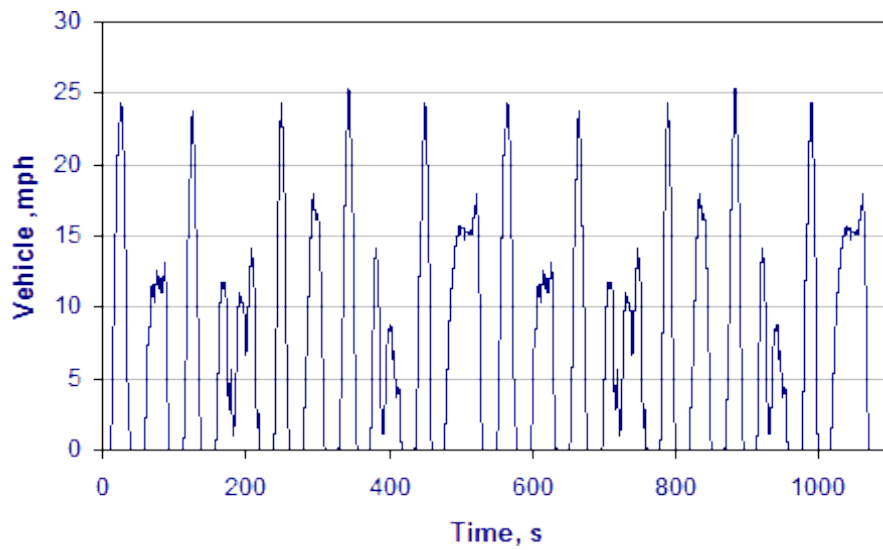


Figure 1. Manhattan Driving Cycle (duration 1089 sec, Maximum speed 25.4 mph, average speed 6.8 mph)

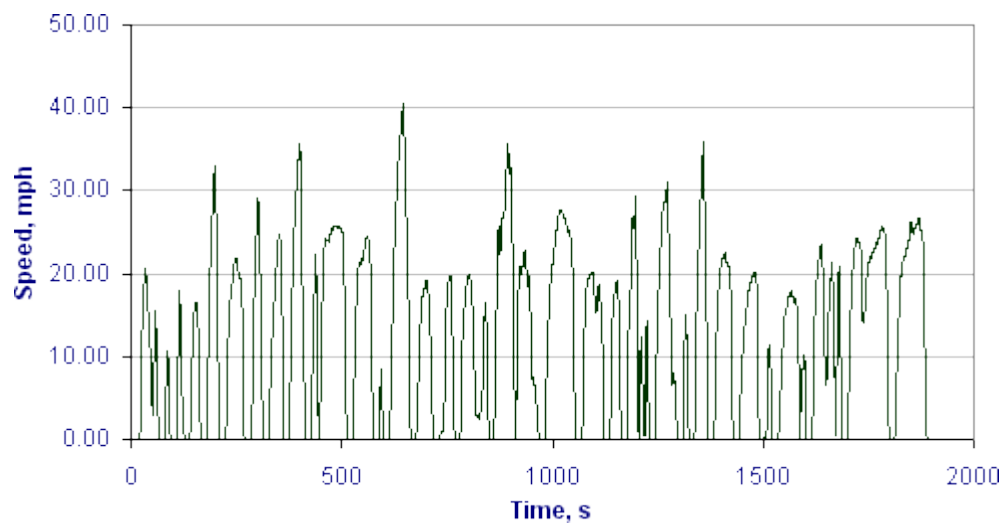


Figure 2. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41 mph, Average Speed 12 mph).

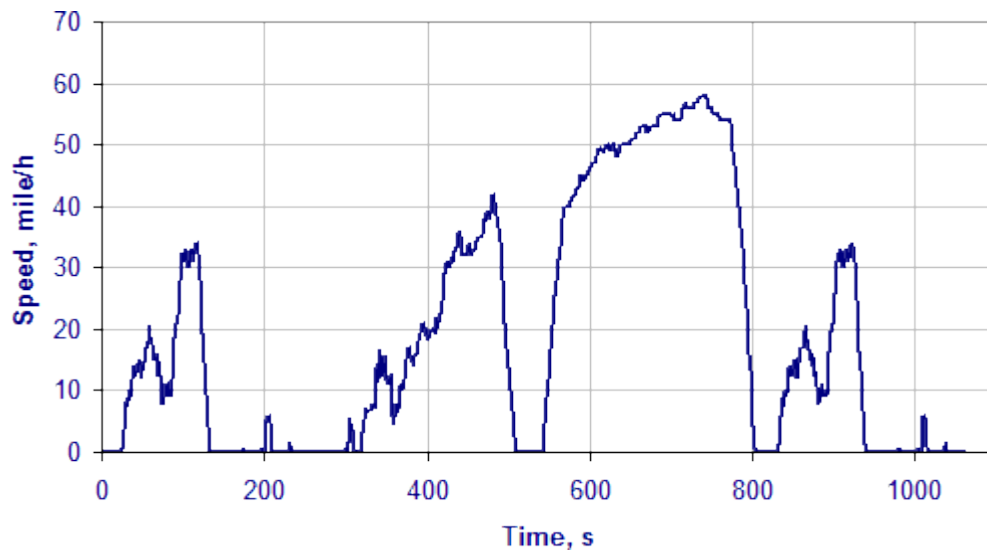


Figure 3. HD-UDDS Cycle (duration 1060 seconds, Maximum Speed 58 mph, Average Speed 18.86 mph).

6-III. DISCUSSION

The driving cycle consists of three simulated transit driving cycles: Manhattan, Orange County Bus Cycle and the HD-UDDS, as described in 6-II. The fuel consumption for each driving cycle and idle was measured.

An extensive pretest maintenance check was 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 Form. Finally, the summary sheet provides the average fuel consumption for the three test cycles and for a 20-minute idle. **The average fuel consumption for the Manhattan, OCBC and the HD-UDDS were 9.70 mpg, 13.5 mpg and 16.0 mpg respectively. For idle, the fuel consumption was 0.35 gal/hr.**

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 1 of 3

Bus Number: 2020-09	Date: 11/03/2020	SLW (lb.): 5,930
Personnel: T.S., E.L., E.D. & S.R.		

FUEL SYSTEM	OK
Install fuel measurement system	✓
Replace fuel filter	N/A
Check for fuel leaks	✓
Specify fuel type (Gasoline)	✓
Remarks: None noted.	
BRAKES/TIRES	OK
Inspect hoses	✓
Inspect brakes	✓
Check tire inflation pressures (mfg. specs.)	✓
Check tire wear (less than 50%)	✓
Remarks: New tires mounted on front / alignment completed.	
COOLING SYSTEM	OK
Check hoses and connections	✓
Check system for coolant leaks	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 2 of 3

Bus Number: 2020-09	Date: 11/03/2020
Personnel: T.S., E.L., E.D., S.R. & P.D.	
ELECTRICAL SYSTEMS	OK
Check battery	✓
Inspect wiring	✓
Inspect terminals	✓
Check lighting	✓
Remarks: None noted.	
DRIVE SYSTEM	OK
Drain transmission fluid	N/A*
Replace filter/gasket	N/A*
Check hoses and connections	✓
Replace transmission fluid	N/A*
Check for fluid leaks	✓
Remarks: *Followed manufacturer's maintenance specifications.	
LUBRICATION	OK
Drain crankcase oil	✓
Replace filters	✓
Replace crankcase oil	✓
Check for oil leaks	✓
Check oil level	✓
Lube all chassis grease fittings	N/A
Lube universal joints	N/A
Replace differential lube including axles	N/A
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 3 of 3

Bus Number: 2020-09	Date: 11/03/2020
Personnel: T.S., E.D., E.L., S.R. & P.D.	
EXHAUST/EMISSION SYSTEM	OK
Check for exhaust leaks	✓
Remarks: None noted.	
ENGINE	OK
Replace air filter	✓
Inspect air compressor and air system	N/A
Inspect vacuum system, if applicable	N/A
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	N/A
Check power steering operation	✓
Remarks: None noted.	
	OK
Ballast bus to seated load weight during coast down	✓
TEST DRIVE	OK
Check brake operation	✓
Check transmission operation	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST INSPECTION FORM

Page 1 of 1

Bus Number: 2020-09	Date: 11/04/2020
Personnel: S.R., T.S. & S.B.	
PRE-WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	S.R.
Cold tire pressure (psi): Front <u>36</u> Middle <u>N/A</u> Rear <u>36</u>	S.R.
Engine oil level	S.R.
Engine coolant level	S.R.
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.
Bus is loaded to SLW during coast down	S.R.
WARM-UP	If OK, Initial
Air conditioning off	S.B.
Exterior & Interior lights on	S.B.
Defroster off	S.B.
Windows and doors closed	S.B.
Do not drive with left foot on brake	S.B.

FUEL ECONOMY DATA FORM (Gaseous and Liquid fuels)

Page 1 of 1

Bus Number: 2020-09	Manufacturer: BraunAbility	Date: 11/05/2020
Fuel Type: Gasoline	Personnel: S.B. & S.I.	
Temperature (°F): 81.7	Humidity (%): 32	Barometric Pressure (inHg): 29.1
SLW (lb.): 5,930		

Cycle	Manhattan	Orange County	HD- UDDS	Idle
Fuel Consumption mpg	9.70	13.5	16.0	0.35 G/hr

Comments: None noted.

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 was measured at several locations with the bus operating under the following three conditions:

1. With the bus stationary, a white noise generating system provided a uniform sound pressure level equal to 80 dB(A) on the left, exterior side of the bus. The engine and all accessories were switched off and all openings including doors and windows were closed. This test was performed at the LTI Test Track Facility.
2. The bus was accelerated at full throttle from a standing start to 35 mph on a level pavement. All openings were closed and all accessories were operating during the test. This test was performed on the track at the LTI Test Track Facility.
3. The bus was operated at various speeds from 0 to 55 mph with and without the air conditioning and accessories on. Any audible vibration or rattles were noted. This test was performed on the test segment between the LTI Test Track and the Bus Testing Center.

All tests were performed in an area free from extraneous sound-making sources or reflecting surfaces. The ambient sound level as well as the surrounding weather conditions were recorded in the test data. All the above data are in the following pages.

7.1-III. DISCUSSION

For the first part, the overall average of the six measurements was 42.8 dB(A); ranging from 38.3 dB(A) at the driver's seat to 45.0 dB(A) at the rear passenger seats. The interior ambient noise level for this test was less than 30 dB(A).

For the second part, the interior noise level ranged from 76.6 dB(A) at the driver's seat to 78.2 dB(A) at the rear passenger seats. The overall average was 77.4 dB(A). The interior ambient noise level for this test was less than 30 dB(A).

No vibrations or rattles were noted during the third part of this test. This bus passed this section of the test.

INTERIOR NOISE TEST DATA FORM

Test Condition 1: 80 dB(A) Stationary White Noise

Page 1 of 3

Bus Number: 2020-09	Date: 10/22/2020
Personnel: S.R., E.D. & P.D.	
Temperature (°F): 70	Humidity (%): 80
Wind Speed (mph): Calm	Wind Direction: W
Barometric Pressure (inHg): 30.09	
Interior Ambient Noise Level dB(A): less than 30	Exterior Ambient Noise Level dB(A): 38.6
Microphone Height During Testing (in): 42.25	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	38.3
Front Passenger Seats	43.3
In Line with Front Speaker	42.7
In Line with Middle Speaker	43.3
In Line with Rear Speaker	43.9
Rear Passenger Seats	45.0

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test
Page 2 of 3

Bus Number: 2020-09	Date: 10/21/2020
Personnel: S.R., E.D. & M.R.	
Temperature (°F): 66	Humidity (%): 80
Wind Speed (mph): 7	Wind Direction: SW
Barometric Pressure (inHg): 30.18	
Interior Ambient Noise Level dB(A): less than 30	Exterior Ambient Noise Level dB(A): 46.1
Microphone Height During Testing (in): 42.25	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	76.6
Front Passenger Seats	76.8
Middle Passenger Seats	78.1
Rear Passenger Seats	78.2

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test
Page 3 of 3

Bus Number: 2020-09	Date: 10/21/2020
Personnel: S.R. & E.D.	
Temperature (°F): 76	

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	N/A	N/A
Windows and Doors	N/A	N/A
Seats and Wheelchair lifts	N/A	N/A
Other	N/A	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 was operated at a SLW in three different conditions using a smooth, straight and level roadway:

1. Accelerating at full throttle from a constant speed starting from 35 mph.
2. Accelerating at full throttle from standstill.
3. Stationary, with the engine at low idle, high idle, and wide-open throttle, where applicable. In addition, the bus was tested with and without the air conditioning operating.

The test site is at the Larson Transportation Institute Test Track and the test procedures were performed 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 was used to measure the noise level.

During the test, special attention was 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

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. All the above data are in the following pages.

7.2-III. DISCUSSION

With an outside ambient noise level of 41.7 dB(A), the average of the two highest readings obtained while accelerating from a constant speed was 68.0 dB(A) on the right side and 67.9 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 40.7 dB(A), the average of the two highest readings obtained were 75.0 dB(A) on the right side and 76.3 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 46.2 dB(A) at low idle and 60.2 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 45.6 dB(A) at low idle and 58.9 dB(A) at wide open throttle. The exterior ambient noise level measured during this test was 40.1 dB(A). This bus passed this section of the test.

EXTERIOR NOISE TEST DATA FORM

Accelerating from Constant Speed

Page 1 of 3

Bus Number: 2020-09		Date: 10/22/2020	
Personnel: S.R. & E.D.			
Temperature (°F): 66		Humidity (%): 82	
Wind Speed (mph): 2		Wind Direction: WSW	
Barometric Pressure (inHg): 30.24			
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: 94.0 dB(A)			
Exterior Ambient Noise Level: 41.7 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	67.6	1	67.8
2	67.7	2	66.5
3	67.4	3	66.6
4	67.2	4	68.0
5	68.3	5	67.0
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 = 68.0 dB(A)		Average of two highest actual noise levels = 67.9 dB(A)	
Final Sound Level Meter Calibration Check: 94.0 dB(A)			
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM

Accelerating from Standstill

Page 2 of 3

Bus Number: 2020-09		Date: 10/22/2020	
Personnel: S.R. & E.D.			
Temperature (°F): 68		Humidity (%): 80	
Wind Speed (mph): Calm		Wind Direction: W	
Barometric Pressure (inHg): 30.09			
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: 94.0 dB(A)			
Exterior Ambient Noise Level: 40.7dB(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	73.3	1	74.6
2	75.0	2	76.0
3	74.9	3	73.9
4	74.1	4	76.2
5	73.9	5	76.4
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 = 75.0 dB(A)		Average of two highest actual noise levels = 76.3 dB(A)	
Final Sound Level Meter Calibration Check: 94.0 dB(A)			
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM

Stationary

Page 3 of 3

Bus Number: 2020-09		Date: 10/21/2020	
Personnel: S.R., E.D. & P.D.			
Temperature (°F): 68		Humidity (%): 80	
Wind Speed (mph): Calm		Wind Direction: W	
Barometric Pressure (inHg): 30.09			
Initial Sound Level Meter Calibration: 94.0 dB(A)			
Exterior Ambient Noise Level: 40.1dB(A)			
Air Conditioning ON			
Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	800	45.9	46.5
High Idle	N/A	N/A	N/A
Wide Open Throttle	3000	60.2	60.1
Air Conditioning OFF			
Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	800	45.8	45.4
High Idle	N/A	N/A	N/A
Wide Open Throttle	3000	58.9	58.9
Final Sound Level Meter Calibration Check: 94.0 dB(A)			
Comments: None noted.			

7.2 EXTERIOR NOISE TESTS



TEST BUS UNDERGOING EXTERIOR NOISE TESTING

8.0 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 on an engine by itself on a dynamometer operating under the Federal Test Protocol.

The Bus Testing Center emissions test is a measurement of the gaseous engine emissions CO, CO₂, NO_x, HC and particulates (diesel vehicles) produced by a complete 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 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 the emissions of buses tested under a range of consistent operating conditions.

8-II. TEST DESCRIPTION

This test was 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 emissions laboratory provides capability for testing heavy-duty diesel, gasoline, 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 dilution tunnel and a constant volume sampling (CVS) emissions measurement 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 was performed as soon as practical 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, a medium average speed transient urban cycle (Figure 2), and the EPA HD-UDDS Cycle, which consists of urban and highway driving segments (Figure 3). An emissions test was comprised of two runs for each of the three different driving cycles, and the average values were reported.

Test results reported include the average grams per mile value for each of the gaseous emissions of carbon dioxide, carbon monoxide, oxides of nitrogen, total hydrocarbons and non-methane hydrocarbons. In addition, emissions of particulate matter will also be reported for diesel fuel 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.

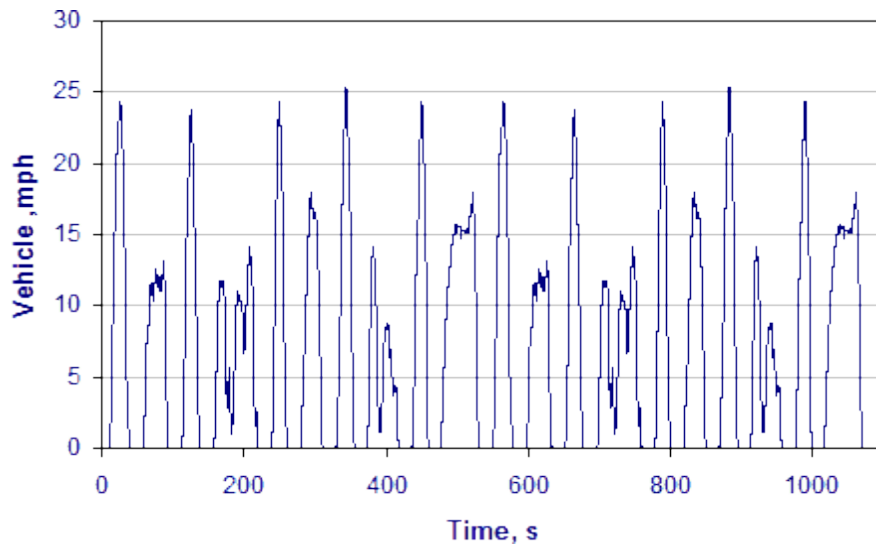


Figure 8.1. Manhattan Driving Cycle (Duration 1089 sec, Maximum Speed 25.4 mph, Average Speed 6.8 mph)

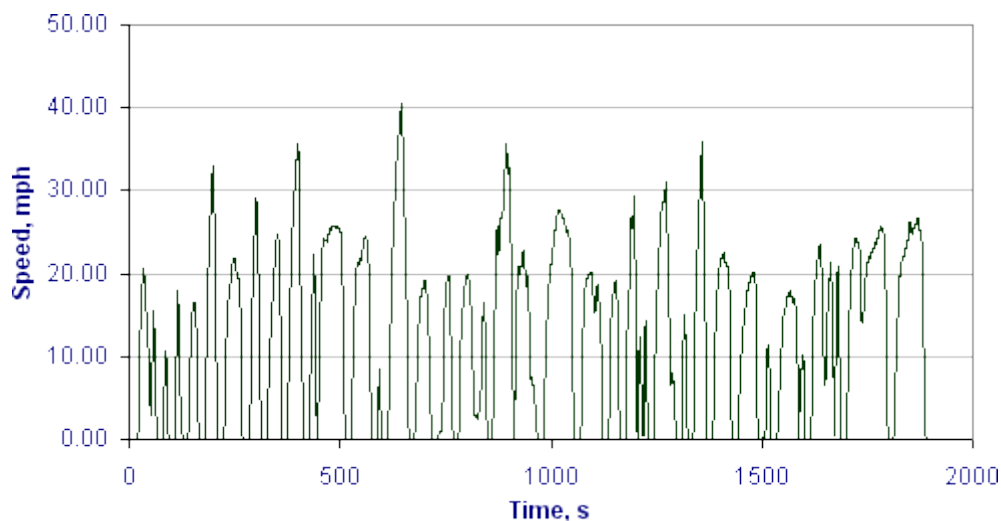


Figure 8.2. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41 mph, Average Speed 12 mph)

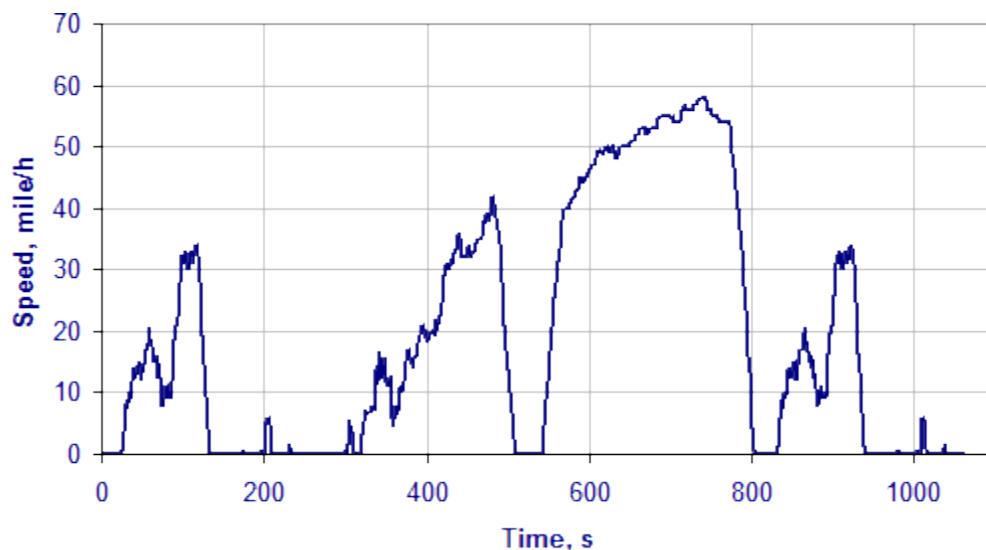


Figure 8.3. HD-UDDS Cycle (Duration 1060 seconds, Maximum Speed 58 mph, Average Speed 18.86 mph)

8-III. TEST ARTICLE

The test article is a BraunAbility / The Braun Corporation 2020 Chrysler Pacifica/Voyager Commercial Wheelchair Accessible Vehicle with Rear-Entry Manual Foldout Ramp model transit bus equipped with a gasoline fueled FCA US LLC 3.6L motor. The bus was tested on November 5, 2020 with the odometer reading 2,711 miles.

8-IV. TEST EQUIPMENT

Testing was 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 returned to 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 NO_x are sampled by Horiba heated oven analyzers.

Gaseous emissions for CO, CO₂ and cold NO_x 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

The test bus was 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 is 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 the Emissions test. Both the Fuel Economy Pre-Test Maintenance Form and the Fuel Economy Pre-Test Inspection Form are found in section 6, Fuel Economy Test.

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. The coast down test is done at seated load weight. This data is used to program the chassis dynamometer to accurately simulate over-the-road operation of the bus.

Warm-up consisted of driving the bus for 20 minutes at approximately 40 mph on the chassis dynamometer. During emissions testing, the test driver followed the prescribed driving cycle by watching the speed trace and instructions on the Horiba Drivers-Aid monitor which is placed in front of the windshield. The CDCTS computer monitored the test and collected data for calculation of emissions at the end of the test.

This bus was tested for emissions at seated load weight. The emissions data was obtained at the following conditions:

1. Air conditioning off
2. Heater off
3. Defroster off
4. Exterior and interior lights on
5. Windows and Doors closed
6. Seated load weight

The test tanks or the bus fuel tank(s) were filled prior to the fuel economy test with gasoline.

8-VI. DISCUSSION

Table 8.1 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 8.1 Emissions Test Results

Test Completed at SLW: 5,930 lb.			
Driving Cycle	Manhattan	Orange County Bus	UDDS
CO₂, gm/mi	865	590	519
CO, gm/mi	0.80	0.48	0.50
THC, gm/mi	0.04	0.01	0.01
NMHC, gm/mi	0.02	0.01	0.00
NO_x, gm/mi	0.00	0.01	0.01
Particulates. gm/mi	N/A	N/A	N/A

8. EMISSIONS TEST



BUS TESTED ON CHASSIS DYNAMOMETER FOR PERFORMANCE, FUEL ECONOMY AND EMISSIONS

FEDERAL TRANSIT BUS TEST

**Performed for the Federal Transit Administration U.S. DOT
In accordance with 49 CFR, Part 665**

Manufacturer: BraunAbility / The Braun Corporation

**Model: Chrysler Pacifica / Voyager Commercial
Wheelchair Accessible Vehicle
w/ Side-Entry Manual Foldout Ramp**

**Tested in Service-Life Category
4 Year / 100,000 Miles**

November 2020

Report Number: LTI-BT-R2020-03

**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 Plank Road
Duncansville, PA 16635
(814) 695-3404**



PennState
College of Engineering

**LTI BUS RESEARCH
AND TESTING CENTER**

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration, U.S. DOT
1200 New Jersey Avenue, SE
Washington, DC 20590

In accordance with 49 CFR Part, 665

Manufacturer: BraunAbility / The Braun Corporation
Manufacturer's address: 631 W. 11th Street
Winamac, IN 46996

Model: Chrysler Pacifica / Voyager Commercial
Wheelchair Accessible Vehicle w/ Side-Entry
Manual Foldout Ramp

Tested in Service-Life Category
4 Year / 100,000 Miles

Report Number: LTI-BT-R2020-03



David Klinikowski

Quality Authorization

Director, Bus Research
and Testing Center

Title

November 20th 2020

Date

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EXECUTIVE SUMMARY

TEST HIGHLIGHTS

The information in this report pertains only to this specific bus, as received from the manufacturer for testing.

The Check-In section of the report provides a description of the bus and specifies its major components. The following table gives the salient specifications.

Manufacturer	BraunAbility / The Braun Corporation
Model	Chrysler Pacifica / Voyager Commercial Wheelchair Accessible Vehicle w/Side- Entry Manual Foldout Ramp
Chassis Make/Model	Chrysler Pacifica / Voyager
Chassis Modified	Yes
Length	16 feet, 8 ½ inches
Fuel	Gasoline
Service Life	4 Years / 100,000 miles
Number of Seats (including driver)	5 and 1 wheelchair
Manufacturer-Designated Standing Passenger Capacity	No standing passengers
Gross Vehicle Weight used for testing	5,830 lb.
Gross Vehicle Weight Rating	6,055 lb.
Mileage at Delivery	37
Test Start Date	March 19, 2020
Test Completion Date	October 07, 2020

The measured curb weight was 2,520 lb. for the front axle and 1,940 lb. for the rear axle. These combined weights provided a total measured curb weight of 4,460 lb. There are 5 seats including the driver and one wheelchair position. Since this vehicle is a minivan, it is not possible to accommodate standing passengers. Therefore, the gross load represents seated passengers only, for a total of 6 passengers. Gross load is calculated as $(150 \text{ lb.} \times 5) + (600 \text{ lb.} \times 1) = 1,350 \text{ lb.}$ At full declared capacity, the measured gross vehicle weight was 5,830 lb.

BUS TESTING BACKGROUND

On August 1, 2016, FTA announced a final rule for bus testing for improving the process of ensuring the safety and reliability of new transit buses. The rule satisfies requirements in MAP-21 to establish minimum performance standards, a standardized scoring system, and a pass-fail threshold based on the score.

FTA's Bus Testing Program (often referred to as "Altoona Testing" due to the location of the main testing center) tests new transit bus models for:

- Maintainability
- Reliability

- Safety
- Performance (including Braking Performance)
- Structural Integrity (including Structural Durability)
- Fuel Economy (Energy Efficiency and Range, for electric buses)
- Noise
- Emissions

Bus models that fail to meet one or more minimum performance standards will “fail” their test and thus be ineligible for purchase with FTA funds until the failures are resolved and validated through further testing. FTA will use this authority to make sure defects are corrected before a bus model can be acquired with FTA funding.

In each application to FTA for the purchase or lease of any new bus model, or any bus model with a major change in configuration or components to be acquired or leased with funds obligated by the FTA, the recipient shall certify that it has received the appropriate full Bus Testing Report and any applicable partial testing report(s) before final acceptance of the first vehicle. In dealing with a bus manufacturer or dealer, the recipient shall be responsible for determining whether a vehicle to be acquired requires full testing or partial testing or has already satisfied the requirements of this part. A bus manufacturer or recipient may request guidance from FTA in making these determinations.

The purpose of the testing is intended set a “Pass/Fail” standard and grade the performance of the buses in order to provide performance information to the transit authorities that can be used in their purchase or lease decisions. The intent of this report is to provide the grantee a relative measure of the performance of a particular model of transit bus against a standard of performance. The passing of this test should ensure a vehicle has a high probability of meeting its service life in the category it was tested.

The data included in this test report and other applicable reports should be reviewed to choose the most suitable bus for a grantee’s operation. A higher scoring bus is not necessarily the best bus for a given application. For example, a bus with a powerful engine may score well because of its performance and gradeability, but another bus with a smaller and more fuel-efficient engine could be a better choice for applications in mostly flat areas. It is the responsibility of the grantee to ensure the proper test report or applicable partial report is in their possession and has been thoroughly reviewed.

The score sheet for the subject vehicle of this test report is provided below. **This bus passed the Altoona test, with an aggregate score of 92.5.**

Bus 2020-03 BraunAbility									
Test category	Standard	Base Pts.	Bonus Pts.	Range	Range	Test Data	Score	FAIL	
1. Maintainability	Unscheduled maint.	< 125 hours	2	14	0	125	0.25	15.97	
2. Reliability	# Class 2 failures	< 2 Uncorrected	2	6	0	2	0	8.00	
	Hazards	No uncorrected Class 1	10	0	P	F	P	10.00	
	Stability	Lane change, 45 mph?	2.5	0	P	F	P	2.50	
3. Safety		< 158 feet at 45mph	0.5	2	80	158	85.6	2.36	
	Braking	Holds Lane, Split coefficient	2.5	0	P	F	P	2.50	
		Parking brake, 20% grade	2.5	0	P	F	P	2.50	
		less than 30 sec	1.5	0	P	F	P	1.50	
4. Performance	Acceleration 0-30 mph	more than 40 mph	1.5	0	P	F	P	1.50	
	Gradeability 2.5%	more than 10 mph	2	0	P	F	P	2.00	
	Gradeability 10%	Exits are operational	1	0	P	F	P	1.00	
	Distortion	No significant deformation	1	0	P	F	P	0.00	
5. Structural Integrity	Static Towing	Towable with std. wrecker	1	0	P	F	P	1.00	
	Dynamic Towing	Liftable with std. jack	1	0	P	F	P	1.00	
	Jacking	Stable on jacks	1	0	P	F	P	1.00	
	Hoisting	No uncorrected failures	13	0	P	F	P	13.00	
	Durability-Structural	No uncorrected failures	12	0	P	F	P	12.00	
	Durability-Powertrain	1-13mpg			1	13	12.7	6.85	
6. Fuel Economy	Liquid fuels	10-50 scf/mi	1	6	10	50	DATA	0.00	
	CNG	15-98 cf/mi			15	98	DATA	0.00	
	Hydrogen	1-3 kWh/mi			1	3	DATA	0.00	
7. Noise	Electric	less than 80 db	0.5	3	30	80	79.8	0.51	
	Int. Noise (0-35 mph)	less than 83 db	0.5	3	50	83	76.9	1.05	
	Ext. Noise (0-35 mph)	0-4000 g/mi		4	0	4000	661	4.34	
	CO ₂	0-20 g/mi		0.4	0	20	1.16	0.38	
8. Emissions	CO	0-3 g/mi	1	0.4	0	3	0.19	0.37	
	Total hydrocarbon	0-3 g/mi		0.4	0	3	0.05	0.39	
	NMHC	0-3 g/mi		0.4	0	2	0	0.40	
	Nitrogen oxides	0-0.1 g/m		0.4	0	0.1	0	0.40	
	Particulates								
Total			60	40				92.5	

Note: The use of the scoring system is not mandatory for procurement. It is only necessary that the bus being procured has received a passing score.

ABBREVIATIONS AND ACRONYMS

ABS	- anti-skid braking system
ABTC	- Altoona Bus Test Center
A/C	- air conditioner, or air conditioning
AC	- alternating current
ADA	- American Disability Act
CDCTS	- chassis dynamometer test control system
CVS	- constant volume sampling
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
DC	- direct current
DIR	- test director
DR	- bus driver
EPA	- Environmental Protection Agency
GAWR	- gross axle weight rating
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
HD-UDDS	- Heavy Duty-Urban Dynamometer Driving Schedule
LTI	- Larson Transportation Institute
mpg	- miles per gallon
mph	- miles per hour
PM	- Preventive maintenance
PSTT	- Penn State Test Track
rpm	- revolutions per minute
SAE	- Society of Automotive Engineers
SCF	- Standard cubic foot
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)
TD	- test driver
TECH	- test technician
TM	- track manager
TP	- test personnel
Wh	- Watt hour

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 consisted 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 certified 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 consisted of a BraunAbility / The Braun Corp., Chrysler Pacifica / Voyager Commercial Wheelchair Accessible Vehicle w/Side-Entry Manual Foldout Ramp bus model. The bus has a front driver's door and a front passenger door behind the front axle, and two rear passenger doors forward of the rear axle. The curbside rear passenger door is equipped with a Braun model 509U91DSA manual fold out ramp. Power is provided by a gasoline fueled, Mopar FUA US LLC 3.6L engine coupled to Chrysler, OEM 948TE, transmission.

The measured curb weight was 2,520 lb. for the front axle and 1,940 lb. for the rear axle. These combined weights provided a total measured curb weight of 4,460 lb. There are 5 seats including the driver and one wheelchair position. Since this vehicle is a minivan, it is not possible to accommodate standing passengers. Therefore, the gross load represents seated passengers only, for a total of 6 passengers. Gross load is calculated as $(150 \text{ lb.} \times 5) + (600 \text{ lb.} \times 1) = 1,350 \text{ lb.}$ At full declared capacity, the measured gross vehicle weight was 5,830 lb.

VEHICLE DATA FORM

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Bus Number: 2020-03	Date of Check-In: 03/19/2020
Bus Manufacturer: BraunAbility/The Braun Corp.	Vehicle Identification Number (VIN): 2C4RC1CG6LR120814
Model Number: Chrysler Pacifica / Voyager	Chassis Mfr./Mod. #: Chrysler Pacifica / Voyager
Personnel: T.S. & E.D.	Starting Odometer Reading: 37 miles

WEIGHT:

Individual Wheel Reactions:

Weights (lb.)	Front Axle		Middle Axle		Rear Axle	
	Curb	Street	Curb	Street	Curb	Street
CW	1,230	1,290	N/A	N/A	1,000	940
SLW	1,390	1,500	N/A	N/A	1,480	1,460
GVW	1,390	1,500	N/A	N/A	1,480	1,460

Total Weight Details:

Weight (lb.)	CW	SLW	GVW	GAWR
Front Axle	2,520	2,890	2,890	2,950
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	1,940	2,940	2,940	3,200
Total	4,460	5,830	5,830	Manufacturer specified GVWR: 6,055

Dimensions:

Length (ft/in)	16 / 8 ½
Width (in)	77 ¾
Height (in)	78
Front Overhang (in)	39
Rear Overhang (in)	39 ½
Wheelbase (in)	122
Wheel Track (in)	Front: 68.2
	Middle: N/A
	Rear: 68.8

VEHICLE DATA FORM

Page 2 of 7

Bus Number: 2020-03	Date: 03/19/2020

CLEARANCES:

Lowest Point Outside Front Axle	Location: Frame	Clearance(in): 7.1
Lowest Point Outside Rear Axle	Location: Exhaust	Clearance(in): 8.3
Lowest Point between Axles	Location: Exhaust	Clearance(in): 6.1
Ground Clearance at the center (in)	6.1	
Front Approach Angle (deg)*	10.3	
Rear Approach Angle (deg)*	19.2	
Ramp Clearance Angle (deg)	5.7	
Aisle Width (in)	N/A	
Inside Standing Height at Center Aisle (in)	60	

*measurements used to calculate approach and departure angles are taken from the centerline of the axles.

BODY DETAILS:

Body Structural Type	Integral / Unibody		
Frame Material	Steel		
Body Material	Steel		
Floor Material	Steel		
Roof Material	Steel		
Windows Type	☐ Fixed	☒ Movable	
Window Mfg./Model No.	Mopar / 43R-001565 DOT459 FYG M540 AS2 19		
Number of Doors	<u>2</u> Front	<u>2</u> Middle	<u>1</u> Rear
Mfr. / Model No.	All doors are OEM to Mopar		
Dimension of Each Door (in)	Front Driver – 42.1 x 29.2 Front Passenger – 42.7 x 29.4 Middle Left – 56.8 x 27.7 Middle Right – 56.6 x 31.4 Rear – 37.6 x 44.9		
Passenger Seat Type	☐ Cantilever	☒ Pedestal	☐ Other (explain)
Driver Seat Type	☐ Air	☒ Spring	☐ Other (explain)
Mfr. / Model No.	Chrysler / OEM		
Number of Seats (including Driver)	5 + 1 wheelchair		

VEHICLE DATA FORM

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Bus Number: 2020-03	Date: 03/19/2020

BODY DETAILS (Contd.)

Free Floor Space (ft ²)	N/A
Height of Each Step at Normal Position (in)	Front 1. <u>1.10</u> 2. <u>23.3</u> 3. <u>N/A</u> 4. <u>N/A</u>
	Middle 1. <u>12.4</u> 2. <u>N/A</u> 3. <u>N/A</u> 4. <u>N/A</u>
	Rear 1. <u>N/A</u> 2. <u>N/A</u> 3. <u>N/A</u> 4. <u>N/A</u>
Step Elevation Change - Kneeling (in)	N/A

ENGINE

Type	☐ C.I.	☐ Alternate Fuel	
	☒ S.I.	☐ Other (explain)	
Mfr. / Model No.	Mopar FUA US LLC / 3.6L		
Location	☐ Front	☐ Rear	☐ Other (explain)
Fuel Type	☒ Gasoline	☐ CNG	☐ Methanol
	☐ Diesel	☐ LNG	☐ Other (explain)
Alternator (Generator) Mfr./Model No.	Denso / P56029732AB		
Maximum Rated Output (Volts / Amps)	12 / 180		
Air Compressor Mfr. / Model No.	N/A		
Maximum Capacity (ft ³ / min)	N/A		
Starter Type	☒ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Mopar / 68348376AC		

VEHICLE DATA FORM

Page 4 of 7

Bus Number: 2020-03	Date: 03/19/2020

TRANSMISSION

Transmission Type	☐ Manual	☒ Automatic	☐ Load Sensing Adaptive
Mfr. / Model No.	Chrysler / OEM 948TE		
Control Type	☐ Mechanical	☒ Electrical	☐ Other
Integral Retarder Mfr. / Model No.	☐ Yes	☒ No	

SUSPENSION

Number of Axles	2		
Front Axle Type	☒ Independent	☐ Beam Axle	
Mfr. / Model No.	Chrysler / OEM		
Axle Ratio (if driven)	Chrysler / OEM		
Suspension Type	☐ Air	☒ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	ZF Sach / REG 001650/2018		
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.	Chrysler / OEM		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☒ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Sach ZF / REG 001649/2018		

VEHICLE DATA FORM

Page 5 of 7

Bus Number: 2020-03	Date: 03/19/20

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Chrysler / OEM
	Tire Mfr./ Model No.	Yokohama Avid S34 235/65R17
Rear	Wheel Mfr./ Model No.	Chrysler / OEM
	Tire Mfr./ Model No.	Yokohama Avid S34 235/65R17

BRAKES

Front Axle Brakes Type	☐ Cam	☒ Disc	☐ Other (explain)
Mfr. / Model No.	Mopar / OEM		
Middle Axle Brakes Type	☐ Cam	☐ Disc	☐ Other
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	☐ Cam	☒ Disc	☐ Other (explain)
Mfr. / Model No.	Mopar / OEM		

HVAC

Heating System Type	☐ Air	☒ Water	☐ Other
Capacity (Btu/hr)	Chrysler / OEM		
Mfr. / Model No.	Chrysler / OEM		
Air Conditioner	☒ Yes	☐ No	
Location	Front		
Capacity (Btu/hr)	Chrysler / OEM		
A/C Compressor Mfr. / Model No.	FCA US LLC / 68225206AD		

STEERING

Steering Gear Box Type	Electric / Hydraulic Rack & pinion		
Mfr. / Model No.	Chrysler / OEM		
Steering Wheel Diameter	15.1"		
Number of turns (lock to lock)	3		
Control Type	☒ Electric	☒ Hydraulic	☐ Other (explain)

VEHICLE DATA FORM

Page 6 of 7

Bus Number: 2020-03	Date: 03/19/2020

OTHERS

Wheelchair Ramps	Location: Right side middle	Type: Manual Fold out
Wheelchair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	Braun / 509491DSA	
Emergency Exit	Location: N/A	Number: N/A

CAPACITIES

Fuel Tank Capacity (gallons)	19
Engine Crankcase Capacity (quarts)	5
Transmission Capacity (pints)	12.7
Differential Capacity (quarts)	N/A
Cooling System Capacity (gallons)	Chrysler / OEM
Power Steering Fluid Capacity (quarts)	Chrysler / OEM

Page 7 of 7

Date: 03/19/2020

List all spare parts, tools and manuals delivered with the bus.

[illegible]

COMPONENT/SUBSYSTEM INSPECTION FORM

Page 1 of 1

Bus Number: 2020-03	Date: 03/19/2020

Subsystem	Checked	Initials	Comments
Air Conditioning Heating and Ventilation	✓	E.D.	None noted.
Body and Sheet Metal	✓	E.D.	Floor underneath bus is scraped & gouged
Frame	✓	E.D.	None noted.
Steering	✓	E.D.	None noted.
Suspension	✓	E.D.	None noted.
Interior/Seating	✓	E.D.	None noted.
Axles	✓	E.D.	None noted.
Brakes	✓	E.D.	None noted.
Tires/Wheels	✓	E.D.	None noted.
Exhaust	✓	E.D.	None noted.
Fuel System	✓	E.D.	None noted.
Power Plant	✓	E.D.	None noted.
Accessories	✓	E.D.	None noted.
ADA Accessible Lift System	N/A	E.D.	N/A
ADA Accessible Ramp System	✓	E.D.	None noted.
Interior Fasteners	✓	E.D.	None noted.
Batteries	✓	E.D.	None noted.

CHECK - IN



**BRAUNABILITY / THE BRAUN CORP.
CHRYSLER PACIFICA / VOYAGER COMMERCIAL
WHEELCHAIR ACCESSIBLE VEHICLE W/SIDE-ENTRY
MANUAL FOLDOUT RAMP**



CHECK - IN CONT.



**BRAUNABILITY / THE BRAUN CORP.
CHRYSLER PACIFICA / VOYAGER COMMERCIAL
WHEELCHAIR ACCESSIBLE VEHICLE W/SIDE-ENTRY
MANUAL FOLDOUT RAMP**



CHECK - IN CONT.



**BRAUN MANUAL FOLDOUT RAMP
MODEL 509U91DSA**

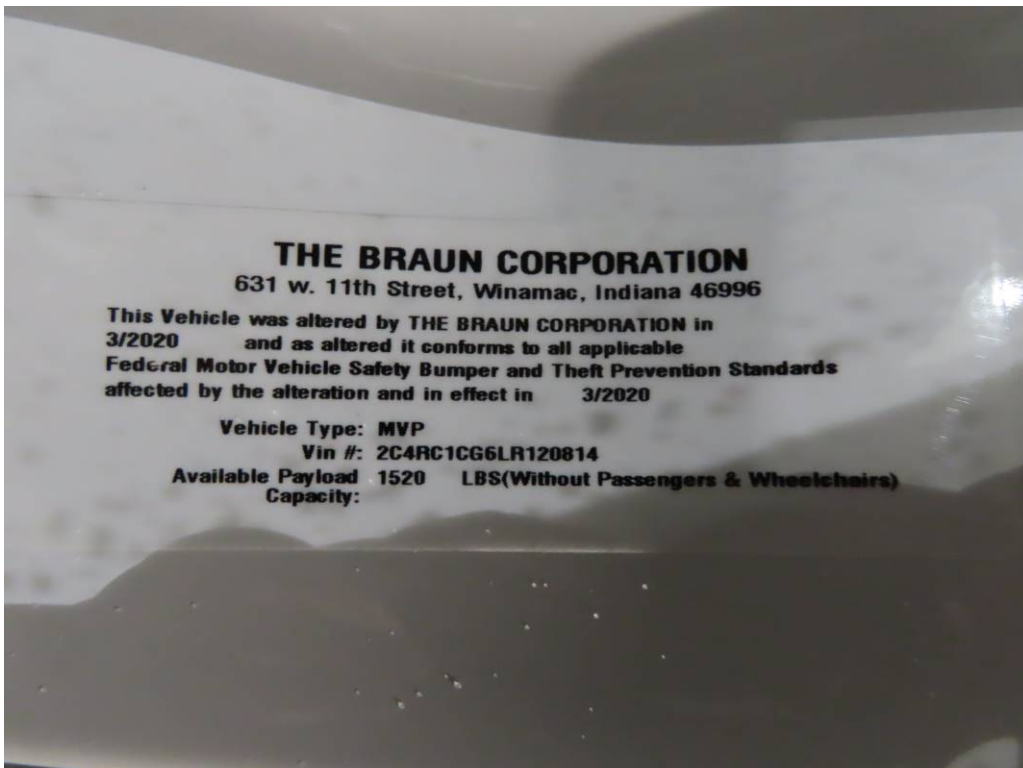


OPERATOR'S AREA

CHECK - IN CONT.

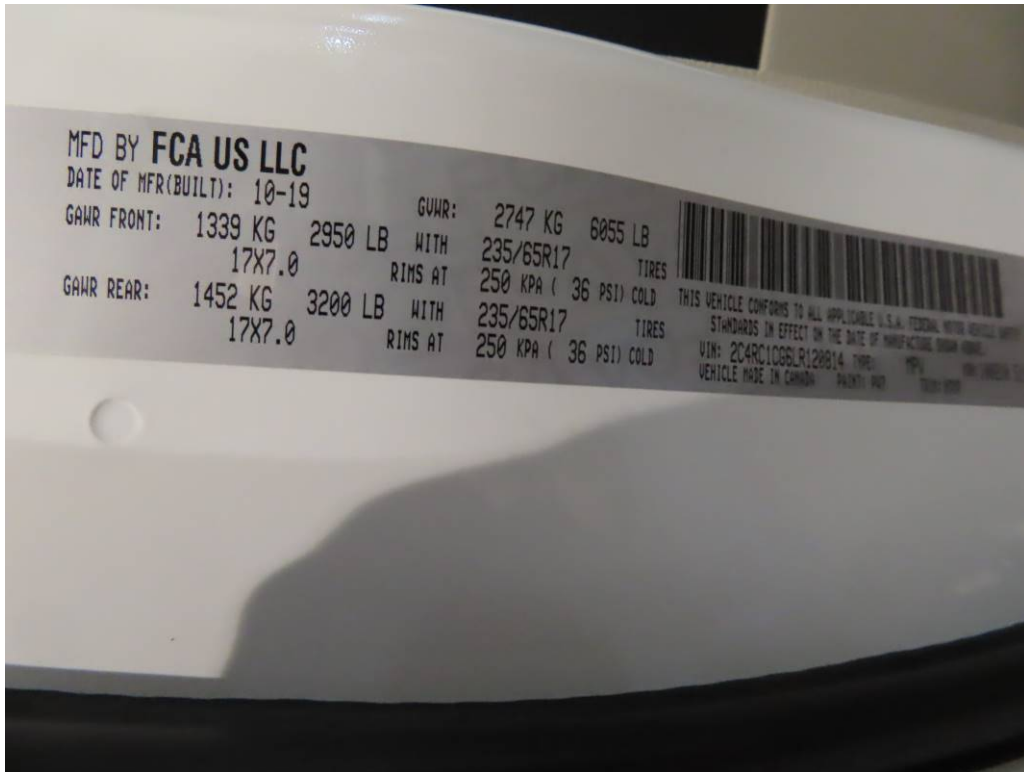


REAR SEATS

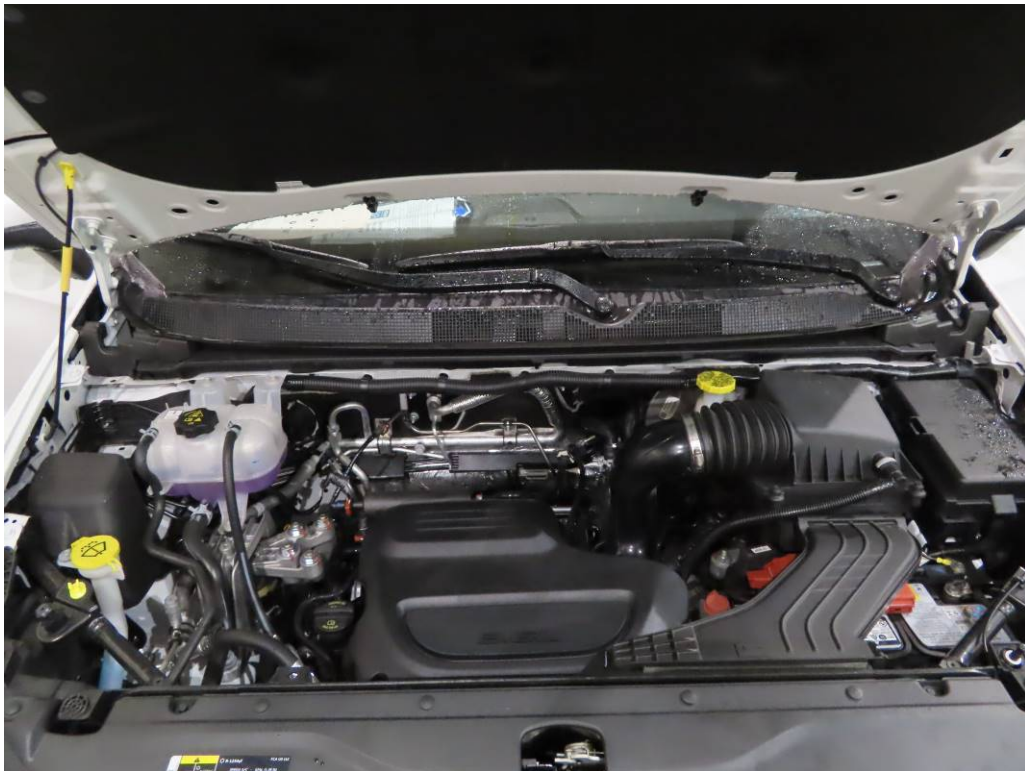


VIN TAG

CHECK - IN CONT.



CHRYSLER VIN TAG



ENGINE COMPARTMENT

CHECK - IN CONT.



SCRAPES AND GOUGES ON UNDERSIDE OF BUS

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 was checked, and where accessibility was restricted the subsystem was 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 generally accessible and no restrictions were noted. However, the engine and transmission had to be removed as one due to the impediment of the front subframe. The front seats and interior panel under the dash had to be removed to access the subframe bolts.

ACCESSIBILITY DATA FORM

Page 1 of 2

Bus Number: 2020-03	Date: 10/07/2020

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 Dipstick	✓	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

Page 2 of 2

Bus Number: 2020-03	Date: 10/07/2020

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	N/A	In the alternator
Voltage Converters	N/A	None noted.
Lighting	✓	None noted.
MISCELLANEOUS:		
Brakes	✓	None noted.
ADA Accessible Lifts/Ramps	✓	Fold out ramp
Instruments	✓	None noted.
Axles	✓	None noted.
Exhaust	✓	None noted.
Fuel System	✓	None noted.
OTHERS:		

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 was conducted by operating the bus and collecting the following data on work order forms and a driver log.

1. Scheduled Maintenance
 - a. Bus number
 - b. Date
 - c. Mileage
 - d. Results of scheduled inspections
 - e. Description of malfunction (if any)
 - f. Repair action and parts used (if any)
 - g. Man-hours required

2. Unscheduled Maintenance
 - a. Bus number
 - b. Date
 - c. Mileage
 - d. Description of malfunction
 - e. Place and time of malfunction (e.g., in service or undergoing inspection)
 - f. Repair action and parts used
 - g. Man-hours required

The bus was operated in accelerated durability service. While typical items are given below, the specific service schedule was 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 manufacturer recommended) 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

*These items are attended to if found necessary, while the others in the list are removed/replaced/tested for all buses undergoing a full test.

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.

The Unscheduled Maintenance List along with 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 was detected, a description of the malfunction and repair, and the time required to perform the repair.

(Page 1 of 1)
SCHEDULED MAINTENANCE
BraunAbility / The Braun Corporation Bus# 2020-03

DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	LABOR HOURS
07/16/20	1,164	P.M./Inspection	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension.	4.00	4.00
07/22/20	2,313	P.M./Inspection	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension.	4.00	4.00
07/28/20	3,168	P.M./Inspection	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension.	4.00	4.00
09/23/20	3,514	P.M./Inspection Fuel Economy	Steering linkage, tie rods, universals/u-joints all checked; all fluids checked. Inspected frame, body and suspension. Oil changed. Oil, fuel, and air filters changed. Transmission oil and filter changed.	8.00	8.00

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 involved components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that failed during testing of the bus was 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

At the end of the test, the items on the list were removed and replaced. The transmission assembly took 8.75 labor-hours (2 persons @ 4.38 hrs.) to remove and replace. The engine and transmission had to be removed as one due to the impediment of the front subframe. The front seats and interior panel under the dash had to be removed to access the subframe bolts. The time required for repair/replacement of the other four components is given on the following Repair and/or Replacement Form.

REPLACEMENT AND/OR REPAIR FORM

Subsystem	Replacement Time
Transmission	8.75 labor hours
Wiper Motor	0.50 labor hours
Starter	1.00 labor hours
Alternator	1.25 labor hours
Batteries	0.50 labor hours

During the test, additional components were removed for repair or replacement and the details are available in Section 5.7 in Unscheduled Maintenance.

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS



**TRANSMISSION REMOVAL AND REPLACEMENT
(8.75 LABOR HOURS)**



**WIPER MOTOR REMOVAL AND REPLACEMENT
(0.50 LABOR HOURS)**

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.



**STARTER REMOVAL AND REPLACEMENT
(1.00 LABOR HOURS)**



**ALTERNATOR REMOVAL AND REPLACEMENT
(1.25 LABOR 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, labor-hours to repair, and hours out of service were 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 injury, a crash and/or significant physical damage.
- (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 was accumulated during the Structural Durability Test. The following Reliability Data Form lists all unscheduled repairs under classes as defined above.

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, Class 2, or Class 4 failures. There was only one Class 3 failure, which affected the electrical system. This failure is available for review in the Unscheduled Maintenance List, located in Section 5.7 Structural Durability.

This bus passed the Structural and Powertrain Durability sections of the test.

RELIABILITY DATA FORMS

Bus Number: 2020-03	Date: 10/08/2020
Personnel: B.L.	

Subsystems	Failure Type				Labor Hours	Down Time
	Class 4 Bad Order	Class 3 Bus Change	Class 2 Road Call	Class 1 Physical Safety		
Electrical	Mileage	Mileage	Mileage	Mileage		
		742			0.25	0.25

3.1 SAFETY - A DOUBLE-LANE CHANGE (OBSTACLE AVOIDANCE)

3.1-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.

3.1-II. TEST DESCRIPTION

The Safety Test consisted of an obstacle avoidance maneuver to evaluate the handling and stability of the bus. The test was conducted at the LTI test track on the vehicle dynamics pad. The bus was driven through a double-lane change course at increasing speeds until the test was determined to be unsafe or a speed of 45 mph is reached. The test is determined unsafe if vehicle handling becomes unstable or if any of the tires lose contact with the pavement.

The layout of the test course was defined by placing pylons along painted guidelines that delineated the course. The guidelines marked off two 12-foot center-to-center lanes. Each lane had two 80 foot long gates with a spacing distance of 80 feet between them. The bus entered the test course in one lane, crossed over to the other lane within the 80 foot gate, traveled for 80 feet, and then returned back into the original lane within the next 80 foot gate. This maneuver was repeated from 20 mph with speed increasing in increments of 5 mph. The test was performed starting from both the right and left lanes.

A test run is considered valid if the bus is able to perform the maneuver at a constant speed without deviating from the test course or striking pylons. If the bus is not able to successfully complete the maneuver due to vehicle instability, the test will be terminated. The highest speed at which the maneuver can be successfully performed up to a maximum speed of 45 mph is recorded on the Safety Data Form.

3.1-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, and therefore, passed this portion of the test.

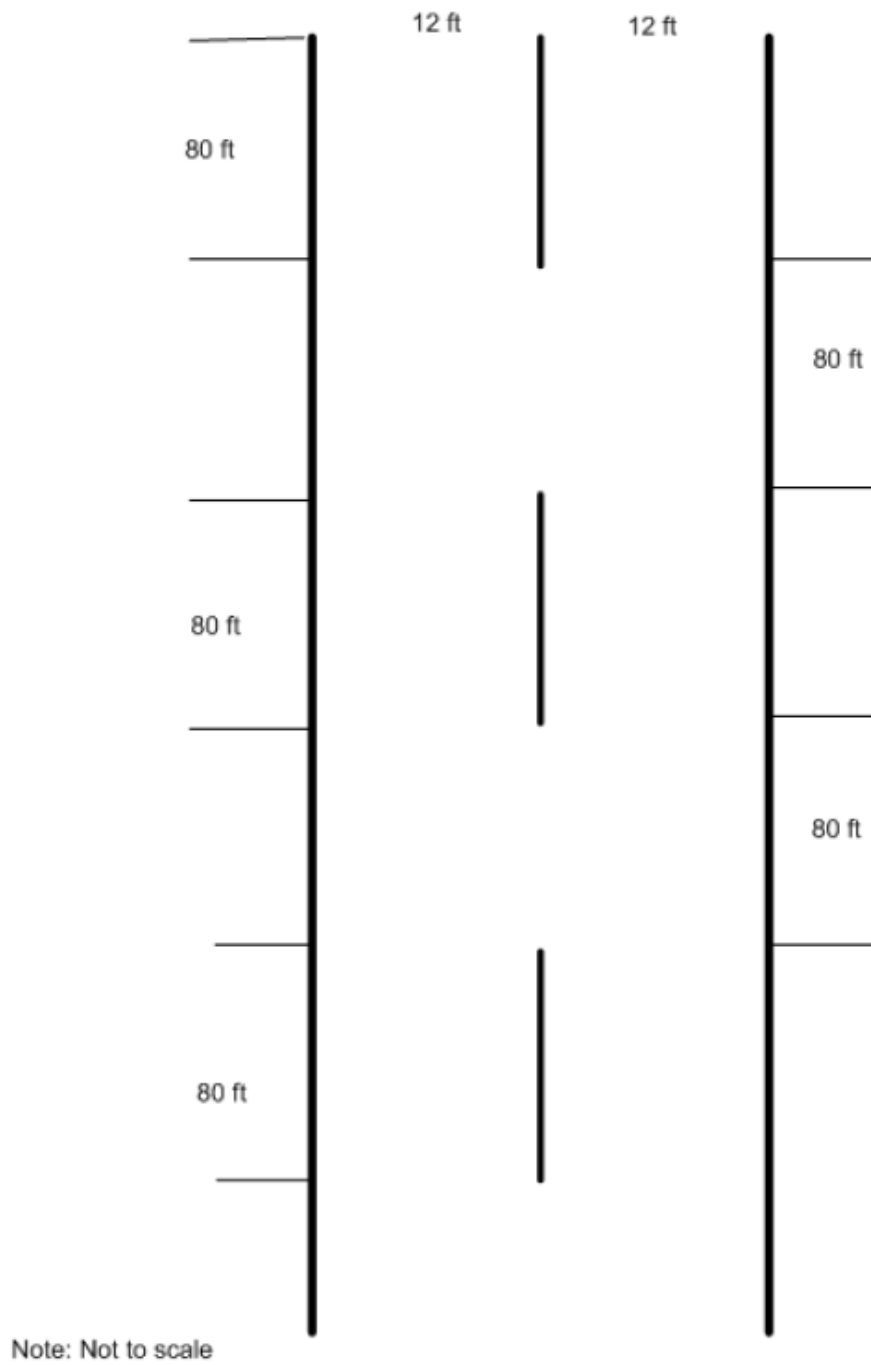


Figure 3.1. Double lane change test course.

SAFETY DATA FORM

Page 1 of 1

Bus Number: 2020-03	Date: 07/20/2020
Personnel: E.D., T.G. & F.T.	

Temperature (°F): 81	Humidity (%): 69
Wind Direction: West	Wind Speed (mph): 9
Barometric Pressure (inHg): 29.99	

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:	
Bus maintained upright position during test.	
Comments of the tire/ground contact patch:	
Tire maintained contact with ground throughout test.	

3.1 SAFETY



RIGHT - HAND APPROACH



LEFT - HAND APPROACH

3.2 Safety - Braking

3.2 I. TEST OBJECTIVE

The objective of this test is to provide, for comparison purposes, braking performance data on transit buses produced by different manufacturers.

3.2 II. TEST DESCRIPTION

The testing was conducted at the LTI Test Track skid pad area. Brake tests were 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. For buses that have not completed Durability Testing, the brakes will be burnished according to the test procedure. Testing was performed when the bus was fully loaded at its GVW. All tires on each bus were representative of the tires on the production model vehicle and inflated to the bus manufacturer's specified pressures.

The brake testing procedure is comprised of 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

3.2-III. DISCUSSION

The results of the Stopping Distance phase of the Brake Test are available in table 3.2-2. There was no deviation from the test lane during the performance of the Stopping Distance phase. The bus passed this portion of the test.

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.

This bus passed all three phases of the Safety –Braking Test.

Table 3.2-1. Braking Test Data Forms

Page 1 of 3

Bus Number: 2020-03	Date: 07/27/2020
Personnel: S.R., T.G. & E.D.	
Amb. Temperature (°F): 85	Wind Speed (mph): 10
Wind Direction: W	Pavement Temp (°F) Start: 105 End:126

TIRE INFLATION PRESSURE (psi):				
Tire Type: Front: Yokohama Avid S34 235 65 R17				
Rear: Yokohama Avid S34 235 65 R17				
	Left Tire(s)		Right Tire(s)	
Front	36		36	
	Inner	Outer	Inner	Outer
Middle	N/A	N/A	N/A	N/A
Rear	N/A	36	N/A	36

AXLE LOADS (lb.)		
	Left	Right
Front	1500	1390
Middle	N/A	N/A
Rear	1460	1480

Table 3.2-2. Stopping Distance Test Results Form
(longest stopping distance in each test condition in bold)

Stopping Distance (ft)					
Vehicle Direction	CW	CW	CCW	CCW	
Speed (mph)	Stop 1	Stop 2	Stop 3	Stop 4	Average
20 (dry)	20.59	21.48	18.40	19.87	20.09
30 (dry)	42.93	44.60	47.42	41.00	43.99
40 (dry)	62.71	66.48	67.83	71.34	67.09
45 (dry)	80.78	90.39	81.08	90.03	85.57
20 (wet)	20.72	20.23	21.12	23.45	21.38

Table 3.2-3. Stability Test Results Form

Stability Test Results (Split Friction Road surface)			
Vehicle Direction	Attempt	Did test bus stay in 12' lane? (Yes/No)	Comments
Driver side on high friction	1	Yes	None noted.
	2	Yes	None noted.
Driver side on low friction	1	Yes	None noted.
	2	Yes	None noted.

Table 3.2-4. Parking Brake Test Form

PARKING BRAKE (GVW) – GRADE HOLDING						
Vehicle Direction	Attempt	Hold Time (min)	Slide (in)	Roll (in)	Did Hold	No Hold
Front up	1	5:00	0	0	✓	
	2	N/A	N/A	N/A		
	3	N/A	N/A	N/A		
Front down	1	5:00	0	0	✓	
	2	N/A	N/A	N/A		
	3	N/A	N/A	N/A		

Table 3.2-5. Record of All Braking System Faults/Repairs.

Date	Fault/Repair	Description
07/27/2020	None noted	None noted

3.2 Safety - Bus Braking



**PARKING BRAKE TEST
PARKING BRAKE HELD FOR 5 MINUTES IN
BOTH 20% UP AND 20% DOWN POSITIONS**



4. PERFORMANCE - AN ACCELERATION, GRADEABILITY, AND TOP SPEED TEST

4-I. TEST OBJECTIVE

The objective of this test is to determine the acceleration, gradeability, and top speed capabilities of the bus.

4-II. TEST DESCRIPTION

In this test, the bus was operated at SLW on a chassis dynamometer. The procedure dictates that the test bus be accelerated to a maximum “power-limited”/“governed” or maximum “safe” speed not exceeding 80 mph. The maximum power-limited/governed speed, if applicable, is the top speed as limited by the engine control system. The maximum safe speed is defined as the maximum speed that the dynamometer, the tires or other bus components are limited to. The test vehicle speed was measured using a speed encoder built in the chassis dynamometer. The time intervals between 10 mph increments were recorded using a Data Acquisitions System. Time-speed data and the top speed attained were recorded on the Performance Data Form. The recorded data was used to generate a percent grade versus speed table and a speed versus time curve. All the above are available in the following pages.

4-III. DISCUSSION

This test consisted of three runs from standstill to full throttle on the chassis dynamometer. Speed versus time data was obtained for each run and results are averaged to minimize test variability. The test was performed up to a maximum safe speed of 81.4 mph. The calculated gradeability results are attached. The average time to reach 30 mph was 3.2 seconds. The maximum gradeability at 10 mph was 41.8% and at 40 mph was 22.8%. This bus passed this section of the test.

PERFORMANCE DATA FORM

Page 1 of 1

Bus Number: 2020-03		Date: 09/28/2020	
Personnel: M.R. & S.I.			
Temperature (°F): 80		Humidity (%): 56.6	
Barometric Pressure (inHg): 28.6			
			INITIALS:
Air Conditioning - OFF	✓Checked	M.R.	
Heater pump motor - OFF	✓Checked	M.R.	
Defroster - OFF	✓Checked	M.R.	
Exterior and interior lights - ON	✓Checked	M.R.	
Windows and doors - CLOSED	✓Checked	M.R.	
ACCELERATION, GRADEABILITY, TOP SPEED			
Recorded Interval Times			
Speed	Run 1	Run 2	Run 3
10 mph	2.1	1.9	1.8
20 mph	3.2	3.1	3.1
30 mph	4.5	4.4	4.5
40 mph	6.1	6.1	6.2
50 mph	8.2	8.2	8.4
60 mph	10.7	10.8	11.0
70 mph	14.3	14.4	14.6

Maximum Speed (mph): 81.4(maximum safe dynamometer speed reached)

PERFORMANCE SUMMARY SHEET

Bus Number: 2020-03	Date: 09/28/2020
Personnel: M.R. & S.I.	

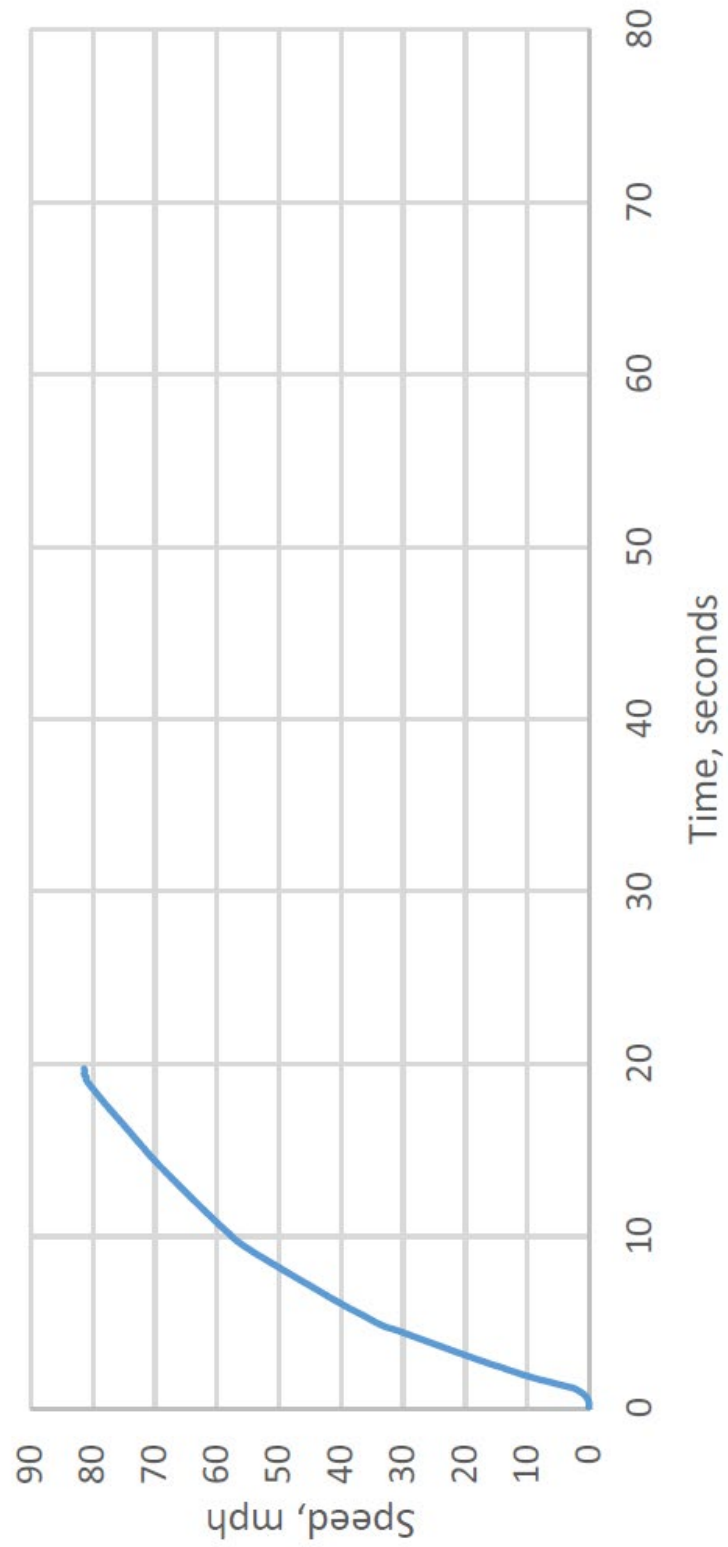
Test Conditions:

Temperature (°F): 80	Humidity (%): 56.6
Barometric Pressure (inHg): 28.6	

Test Results:

Vehicle Speed (MPH)	Time (SEC)	Acceleration (FT/SEC^2)	Max. Grade (%)
1.0	0.9	7.64	23.7
5.0	1.5	12.61	39.2
10.0	1.9	13.46	41.8
15.0	2.5	12.42	38.6
20.0	3.1	11.65	36.2
25.0	3.8	11.24	34.9
30.0	3.2	11.55	35.9
35.0	3.6	11.25	34.9
40.0	6.1	7.35	22.8
45.0	7.2	7.00	21.7
50.0	8.2	6.81	21.1
55.0	9.3	5.97	18.5
60.0	10.8	4.36	13.5
65.0	12.6	4.07	12.6
70.0	14.4	3.77	11.7
75.0	16.5	3.52	10.9
80.0	18.6	2.84	8.8
81.4	19.7	Maximum Speed	

BraunAbility Bus# 2020-03



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 GVW, each wheel of the bus was raised (one at a time) to simulate operation over a curb and the following were 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 was then 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, steering and ADA accessible devices 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. This bus passed this section of the test.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Page 1 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., T.G. & E.L.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 2 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)
 Page 3 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 4 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 5 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 6 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 7 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 8 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
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Right center	☐ 6 in higher	☐ 6 in lower
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	Comments
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Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
ADA Accessible/ 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)

Page 9 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 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.
ADA Accessible/ 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)

Page 10 of 10

Bus Number: 2020-03	Date: 07/07/2020
Personnel: S.R., E.L. & T.G.	Temperature(°F): 80

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
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	Comments
Windows	No deficiencies.
Front Doors	No deficiencies.
Rear Doors	No deficiencies.
Escape Mechanisms/ Roof Vents	No deficiencies.
Engine	No deficiencies.
ADA Accessible/ 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



LEFT FRONT WHEEL SIX INCHES HIGHER



RIGHT FRONT 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 was used to apply a static tension load equal to 1.2 times the bus curb weight. The load was 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 was recorded.

5.3-III. DISCUSSION

The test bus submitted for testing was not equipped with any type of tow eyes or tow hooks. Therefore, the static towing test was not performed. This bus is deemed to pass this section of the test, but no points were allotted for this section.

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 required the bus to be towed at curb weight using the specified equipment and instructions provided by the manufacturer and a heavy-duty wrecker. The bus was towed for 5 miles at a speed of 20 mph for each recommended towing configuration. After releasing the bus from the wrecker, the bus was visually inspected for any structural damage or permanent deformation. All doors, windows and passenger escape mechanisms were 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. No problems, deformation, or damage was noted during testing. This bus passed this section of the test.

DYNAMIC TOWING TEST DATA FORM

Page 1 of 1

Bus Number: 2020-03	Date: 08/13/2020
Personnel: S.R. & E.D.	

Temperature (°F): 82	
Wind Direction: South	Wind Speed (mph): 2

Inspect tow equipment-bus interface.
Comments: An adequate connection was made using a wheel lift.
Inspect tow equipment-wrecker interface.
Comments: An adequate connection between tow equipment and wrecker was
noted.
Towing Comments: A full tow was accomplished.
Description and location of any structural damage: None noted.
General Comments: None 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 were replaced with deflated tire(s) of the appropriate type. A portable hydraulic floor jack was 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) were replaced with the original tire(s) and the jack was lowered. Any structural damage or permanent deformation was recorded on the test data sheet. This procedure was repeated for each corner of the bus.

5.5-III. DISCUSSION

During the deflated portion of the test, the jacking point clearances ranged from 4.9 inches to 7.3 inches. No deformation or damage was observed during testing. A complete listing of jacking point clearances is provided in the Jacking Test Data Form. This bus passed this section of the test.

JACKING CLEARANCE SUMMARY

Condition	Frame Point Clearance
Front axle – one tire flat	5.1
Rear axle – one tire flat	6.6
Rear axle – two tires flat	N/A

JACKING TEST DATA FORM

Page 1 of 1

Bus Number: 2020-03	Date: 03/20/20
Personnel: S.R. & E.D.	Temperature (°F): 69

Record any permanent deformation or damage to bus as well as any difficulty encountered during jacking procedure.

I= Inflated D= Deflated

Deflated Tire	Jacking Pad Clearance Body/Frame (in)	Jacking Pad Clearance Axle/Suspension (in)	Comments
Right front	7.4" I 5.4" D	8.1" I 6.5" D	Body & Suspension
Left front	7.3" I 5.1" D	8.1" I 6.2" D	Body & Suspension
Right rear	8.5" I 6.6" D	6.5" I 4.9" D	Body & Suspension
Left rear	9.0" I 7.3" D	6.7" I 5.2" D	Body & Suspension
Left rear—outside	N/A	N/A	N/A
Left rear—both	N/A	N/A	N/A
Right middle or tag—outside	N/A	N/A	N/A
Right middle or tag—both	N/A	N/A	N/A
Left middle or tag—outside	N/A	N/A	N/A
Left middle or tag—both	N/A	N/A	N/A
Additional comments of any deformation or difficulty during jacking:			
None noted.			

5.5 JACKING TEST



FRONT JACK IN PLACE



REAR JACK IN PLACE

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 was 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 was checked for stability on the jack stands and for any damage to the jacking pads or bulkheads. The procedure was repeated for the tag/middle axles (if equipped), and rear end of the bus. The procedure was then repeated for the front, tag/middle (if equipped) axles, and rear simultaneously.

5.6-III. DISCUSSION

The test was conducted using four posts of a six-post electric lift and 19-inch jack stands. The bus was hoisted from the front wheels, then from the rear wheels, and then from the front and rear wheels simultaneously and placed on jack stands.

The bus accommodated the placement of the vehicle lifts and jack stands and the procedure was performed without any instability noted. This bus passed this section of the test.

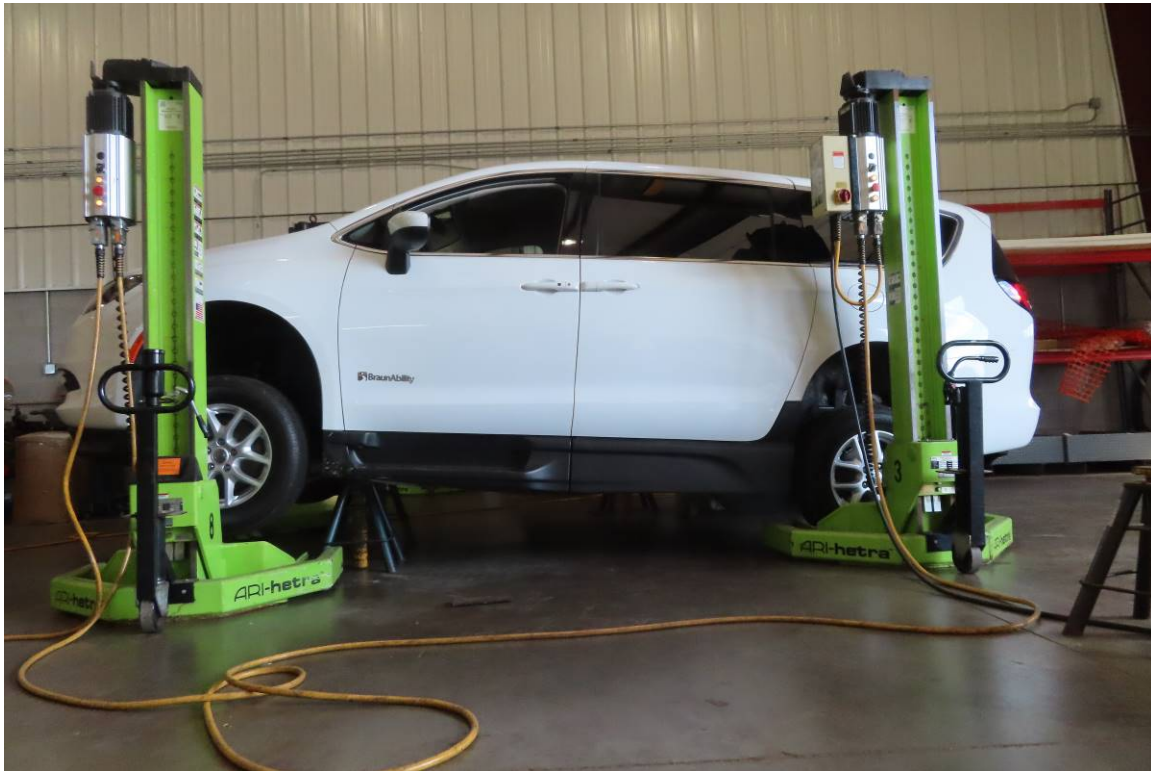
HOISTING TEST DATA FORM

Page 1 of 1

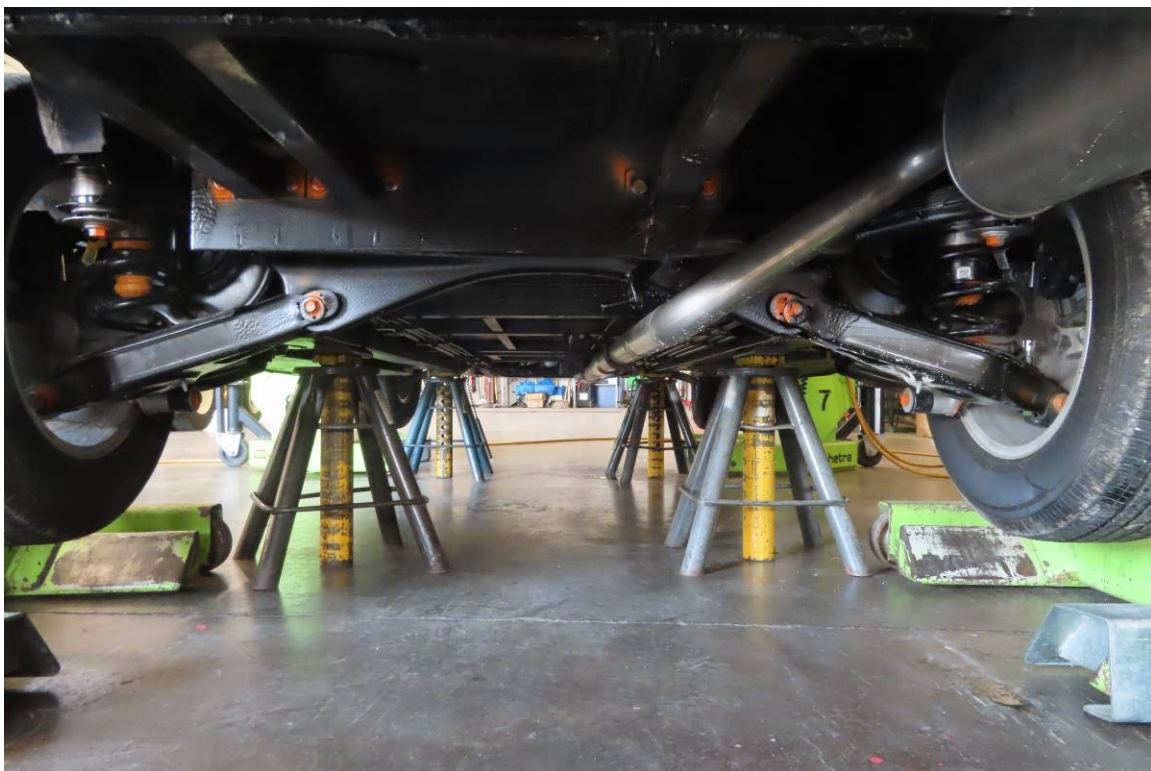
Bus Number: 2020-03	Date: 03/20/20
Personnel: E.D. & E.L.	Temperature (°F): 69

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 the front, tag axle and rear wheels are supported by the jack stands:
None noted.
Comments of any problems or interference placing wheel hoists under wheels:
None noted.

5.6 HOISTING TEST



FRONT JACK STANDS IN PLACE



FRONT AND REAR JACK STANDS IN PLACE

5.7 STRUCTURAL DURABILITY TEST

5.7-I. TEST OBJECTIVE

The objective of this test is to perform an accelerated durability test that approximates 25 percent of the service life of the vehicle.

5.7-II. TEST DESCRIPTION

The test vehicle was driven a total of 3,800 miles; approximately 2,500 miles on the LTI Durability Test Track and approximately 1,300 miscellaneous other miles. The test was conducted with the bus operated under three different loading conditions. The first segment consisted of approximately 1,700 miles with the bus operated at GVW. The second segment consisted of approximately 600 miles with the bus operated at SLW. The remainder of the test, approximately 1,500 miles, was conducted with the bus loaded to CW. The loads on both axles and GVW were within their ratings with the bus loaded as specified by the manufacturer. All subsystems were running during these tests in their normal operating modes. All manufacturer-recommended servicing was followed and noted on the vehicle maintainability log. Servicing items accelerated by the durability tests were compressed by 10:1; all others were done on a 1:1 mi/mi basis. Unscheduled breakdowns and repairs were recorded on the same log as are any unusual occurrences as noted by the driver. Once a week the test vehicle was washed down and thoroughly inspected for any signs of failure.

5.7-III. DISCUSSION

The Structural Durability Test was started on July 13, 2020 and was conducted until October 2, 2020. The first 1,700 miles were performed at a GVW of 5,830 lb. and completed on July 20, 2020. The next 600-mile SLW segment was performed at 5,830 lb. and completed on July 22, 2020 and the final 1,500-mile segment was performed at a CW of 4,460 lb. and completed on October 2, 2020.

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 LTI 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. This bus passed this section of the test, as there were no uncorrected Class 1 or Class 2 failures, and the unscheduled maintenance of 0.25 hours was less than 125 hours.

BraunAbility / The Braun Corporation Bus # 2020-03
MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
07/13/20 TO 07/19/20	1000.00	440.00	1440.00
07/20/20 TO 07/26/20	1025.00	394.00	1419.00
07/27/20 TO 08/02/20	475.00	179.00	654.00
08/03/20 TO 08/09/20	0.00	0.00	0.00
08/10/20 TO 08/16/20	0.00	0.00	0.00
08/17/20 TO 08/23/20	0.00	0.00	0.00
08/24/20 TO 08/30/20	0.00	0.00	0.00
08/31/20 TO 09/06/20	0.00	0.00	0.00
09/07/20 TO 09/13/20	0.00	0.00	0.00
09/14/20 TO 9/20/2020	0.00	0.00	0.00
09/21/20 TO 09/27/20	0.00	0.00	0.00
09/28/20 TO 10/4/2020	0.00	309.00	309.00
Total	2500.00	1322.00	3822.00

Driving Schedule for Bus Operation on the Durability Test Track.

STANDARD OPERATING SCHEDULE

Monday through Friday

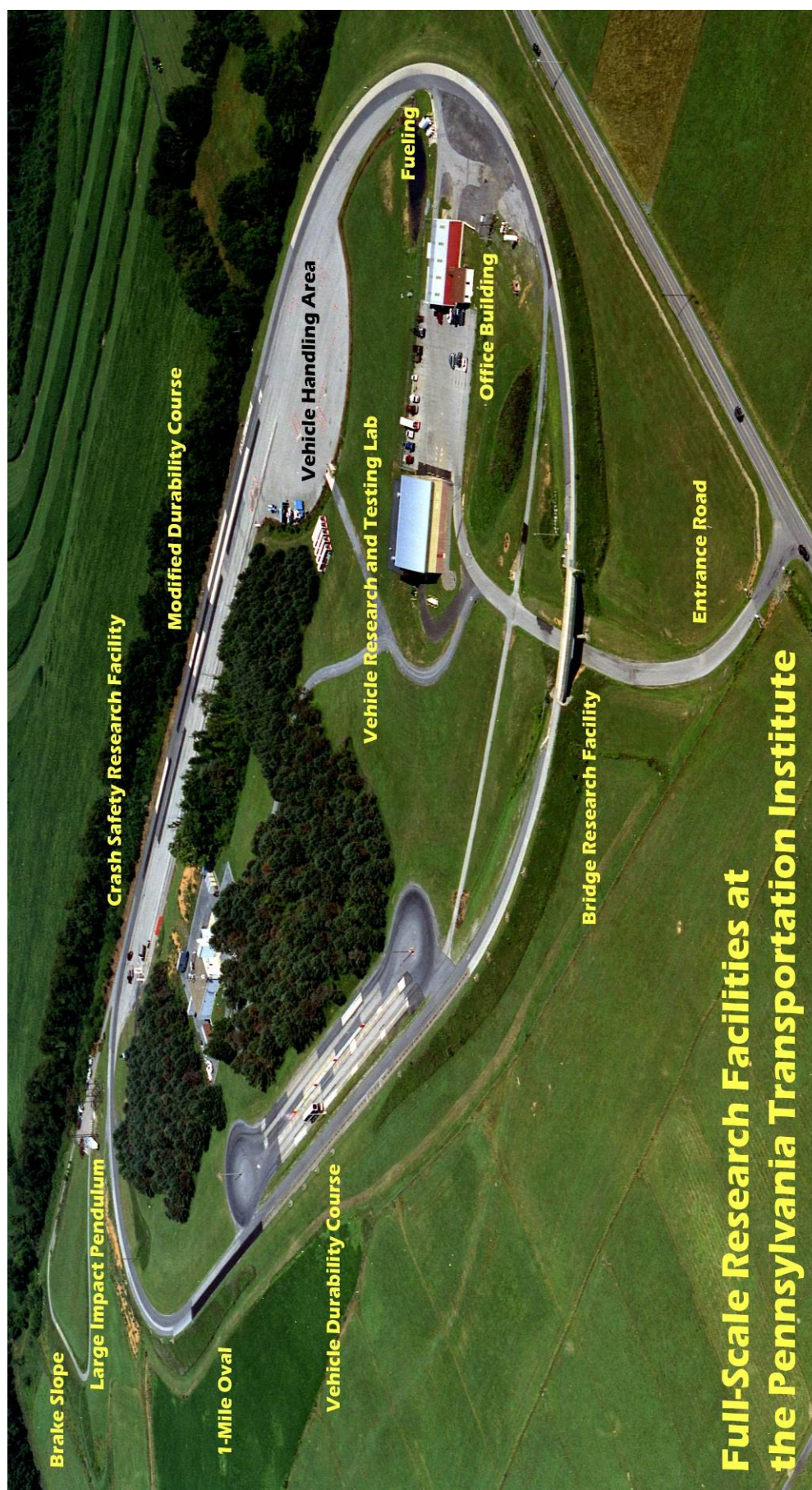
	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 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

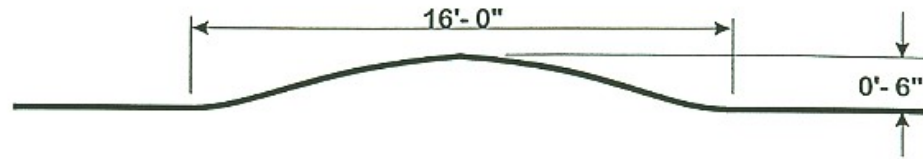
F—Fuel bus, complete driver's log shift entries



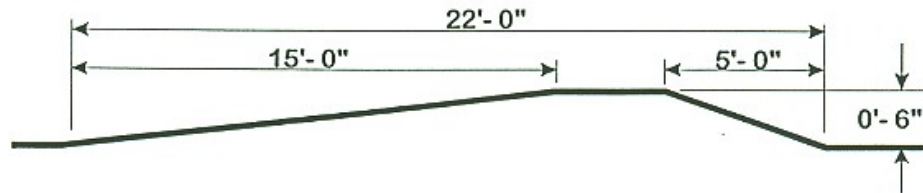
Full-Scale Research Facilities at the Pennsylvania Transportation Institute



Staggered
Bumps
(10 mph)



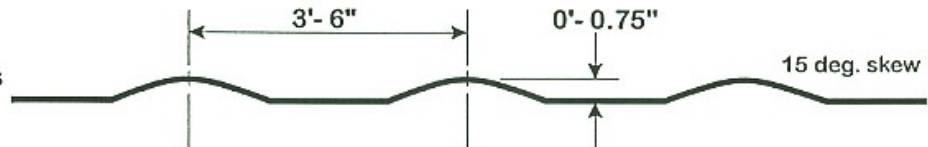
Railroad
Crossing
(8 mph)



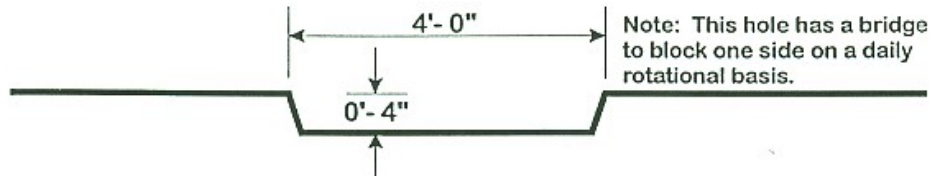
1" Random
Chuck Holes
(20 mph)



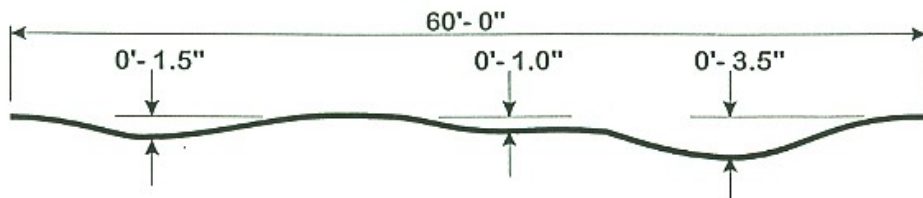
Chatter Bumps
(20 mph)



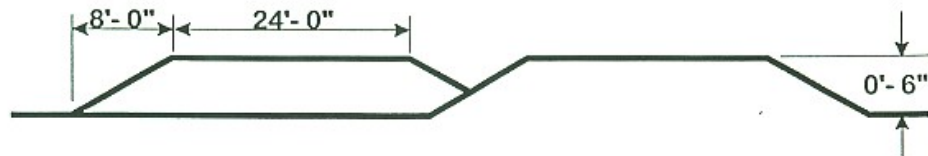
4" Chuck Hole
(5 mph)



High Crown
Intersection
(20 mph)



Frame Twist
(10 mph)



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

2020-03

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UNSCHEDULED MAINT.



**“STOP/START” LIGHT AND “INACTIVE STABILITY
CONTROL” LIGHTS ON
(742 - 3,459 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 operating profile, under specified operating conditions that are typical of transit bus operation. The results of this test may not represent actual mileage in transit service but will provide data that can be used by FTA Grantees to compare the efficiency of buses tested using this procedure.

6-II. TEST DESCRIPTION

This test was 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 driving cycles are the Manhattan cycle, a low average speed, highly transient urban cycle (Figure 1), the Orange County Bus Cycle, a medium average speed transient urban cycle (Figure 2), and the EPA HD-UDDS Cycle, which consists of urban and highway driving segments (Figure 3). A fuel economy test was comprised of two runs for the three different driving cycles, and the average value was reported.

The test procedure for liquid-fueled buses such as this one uses a calibrated flowmeter system and/or a calibrated fuel weighing scale. The flowmeter system utilizes a precise four-piston positive displacement flow meter. The weighing scale system includes heat exchangers to maintain temperature in diesel and common-rail injection systems.

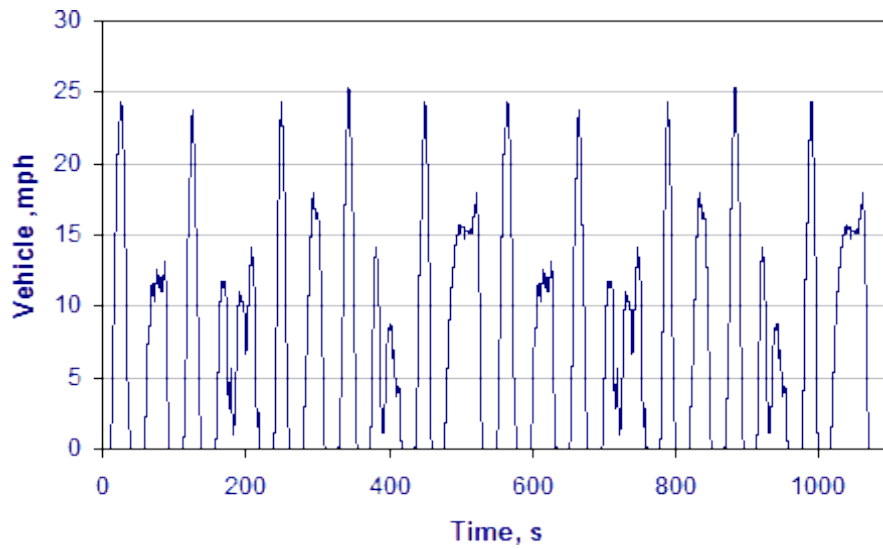


Figure 1. Manhattan Driving Cycle (duration 1089 sec, Maximum speed 25.4 mph, average speed 6.8 mph)

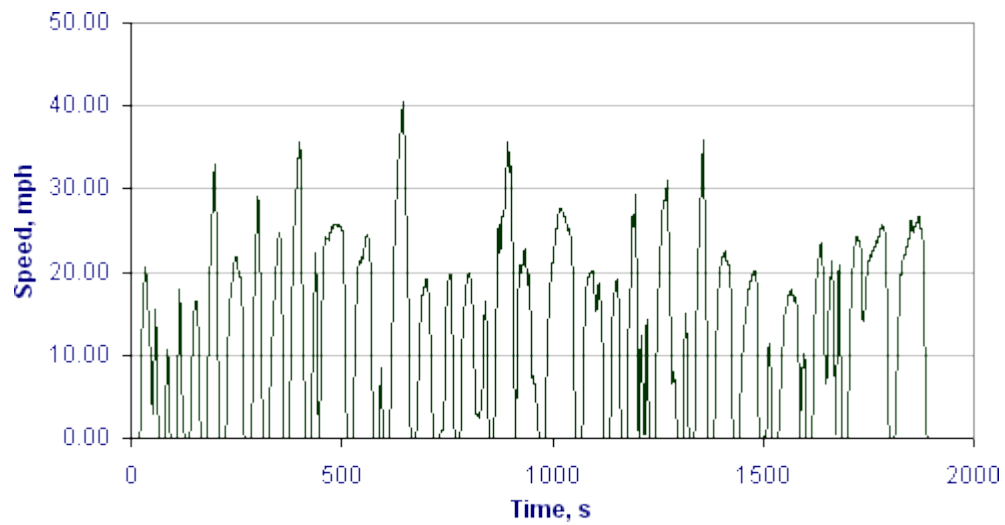


Figure 2. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41 mph, Average Speed 12 mph).

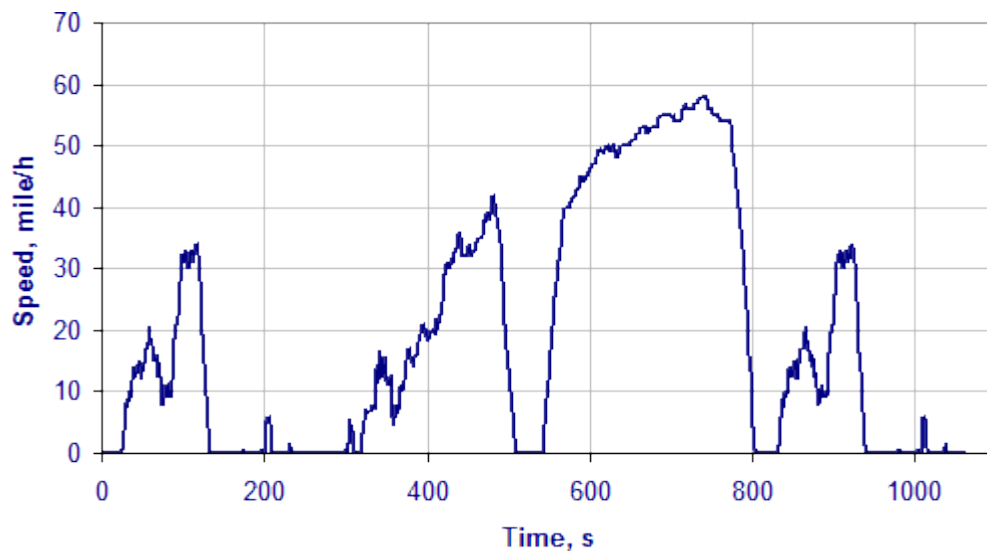


Figure 3. HD-UDDS Cycle (duration 1060 seconds, Maximum Speed 58 mph, Average Speed 18.86 mph).

6-III. DISCUSSION

The driving cycle consists of three simulated transit driving cycles: Manhattan, Orange County Bus Cycle and the HD-UDDS, as described in 6-II. The fuel consumption for each driving cycle and idle was measured.

An extensive pretest maintenance check was 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 Form. Finally, the summary sheet provides the average fuel consumption for the three test cycles and for a 20-minute idle. **The average fuel consumption for the Manhattan, OCBC and the HD-UDDS were 10.2 mpg, 13.0 mpg and 15.0 mpg, respectively. For idle, the fuel consumption was 0.35 gal/hr.**

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 1 of 3

Bus Number: 2020-03	Date: 07/31/2020	SLW (lb.): 5,830
Personnel: S.R., E.L. & P.D.		

FUEL SYSTEM	OK
Install fuel measurement system	✓
Replace fuel filter	✓
Check for fuel leaks	✓
Specify fuel type (Gasoline)	✓
Remarks: None noted.	
BRAKES/TIRES	OK
Inspect hoses	✓
Inspect brakes	✓
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

Page 2 of 3

Bus Number: 2020-03	Date: 07/31/2020
Personnel: S.R., E.L. & P.D.	
ELECTRICAL SYSTEMS	OK
Check battery	✓
Inspect wiring	✓
Inspect terminals	✓
Check lighting	✓
Remarks: None noted.	
DRIVE SYSTEM	OK
Drain transmission fluid	N/A
Replace filter/gasket	N/A
Check hoses and connections	✓
Replace transmission fluid	N/A
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	N/A
Lube universal joints	N/A
Replace differential lube including axles	N/A
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 3 of 3

Bus Number: 2020-03	Date: 07/31/2020
Personnel: S.R., E.L. & P.D.	
EXHAUST/EMISSION SYSTEM	OK
Check for exhaust leaks	✓
Remarks: None noted.	
ENGINE	OK
Replace air filter	N/A
Inspect air compressor and air system	N/A
Inspect vacuum system, if applicable	N/A
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	N/A
Check power steering operation	✓
Remarks: Fluid level ok.	
	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

Page 1 of 1

Bus Number: 2020-03	Date: 09/28/2020
Personnel: S.I. & M.R.	
PRE-WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	T.S.
Cold tire pressure (psi): Front <u>36</u> Middle <u>N/A</u> Rear <u>36</u>	T.S.
Engine oil level	T.S.
Engine coolant level	T.S.
Fuel economy instrumentation installed and working properly.	T.S.
Fuel line -- no leaks or kinks	T.S.
Bus is loaded to SLW during coast down	T.S.
WARM-UP	If OK, Initial
Air conditioning off	M.R.
Interior and exterior lights on, evaporator fan on	M.R.
Defroster off	M.R.
Windows and doors closed	M.R.
Do not drive with left foot on brake	M.R.

FUEL ECONOMY DATA FORM (Gaseous and Liquid fuels)

Page 1 of 1

Bus Number: 2020-03	Manufacturer: BraunAbility	Date: 09/28/2020
Fuel Type: Gasoline	Personnel: S.I. & M.R.	
Temperature (°F): 93	Humidity (%): 56	Barometric Pressure (inHg): 28.5
SLW (lb.): 5,830		

Cycle	Manhattan	Orange County	HD-UDDS	Idle
Fuel Consumption mpg	10.2	13.0	15.0	0.35 G/hr

Comments: None noted.

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 was measured at several locations with the bus operating under the following three conditions:

1. With the bus stationary, a white noise generating system provided a uniform sound pressure level equal to 80 dB(A) on the left, exterior side of the bus. The engine and all accessories were switched off and all openings including doors and windows were closed. This test was performed at the LTI Test Track Facility.
2. The bus was accelerated at full throttle from a standing start to 35 mph on a level pavement. All openings were closed and all accessories were operating during the test. This test was performed on the track at the LTI Test Track Facility.
3. The bus was operated at various speeds from 0 to 55 mph with and without the air conditioning and accessories on. Any audible vibration or rattles were noted. This test was performed on the test segment between the LTI Test Track and the Bus Testing Center.

All tests were performed in an area free from extraneous sound-making sources or reflecting surfaces. The ambient sound level as well as the surrounding weather conditions were recorded in the test data.

7.1-III. DISCUSSION

For the first part, the overall average of the six measurements was 43.0 dB(A); ranging from 41.4 dB(A) at the driver's seat to 44.4 dB(A) at the rear passenger seats. The interior ambient noise level for this test was less than 30 dB(A).

For the second part, the interior noise level ranged from 76.9 dB(A) at the middle passenger seats to 79.8 dB(A) at the driver's seat and front passenger seats. The overall average was 78.6 dB(A). The interior ambient noise level for this test was less than 30 dB(A).

No vibrations or rattles were noted during the third part of this test. This bus passed this section of the test.

INTERIOR NOISE TEST DATA FORM

Test Condition 1: 80 dB(A) Stationary White Noise

Page 1 of 3

Bus Number: 2020-03	Date: 07/28/2020
Personnel: E.D., S.R., T.S. & T.G.	
Temperature (°F): 73	Humidity (%): 83
Wind Speed (mph): 5	Wind Direction: W
Barometric Pressure (inHg): 29.93	
Interior Ambient Noise Level dB(A): Less than 30	Exterior Ambient Noise Level dB(A): 38.9
Microphone Height During Testing (in): 53	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	41.4
Front Passenger Seats	41.7
In Line with Front Speaker	42.1
In Line with Middle Speaker	44.2
In Line with Rear Speaker	44.3
Rear Passenger Seats	44.4

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test
Page 2 of 3

Bus Number: 2020-03	Date: 07/28/2020
Personnel: E.D. & S.R.	
Temperature (°F): 78	Humidity (%): 65
Wind Speed (mph): 3	Wind Direction: NW
Barometric Pressure (inHg): 29.94	
Interior Ambient Noise Level dB(A): Less than 30	Exterior Ambient Noise Level dB(A): 38.8
Microphone Height During Testing (in): 53	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	79.8
Front Passenger Seats	79.8
Middle Passenger Seats	76.9
Rear Passenger Seats	77.9

Comments: None noted.

INTERIOR NOISE TEST DATA FORM

Test Condition 3: Audible Vibration Test

Page 3 of 3

Bus Number: 2020-03	Date: 07/20/2020
Personnel: E.D., T.G., F.T.	
Temperature (°F): 85	

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	N/A	None noted.
Windows and Doors	N/A	None noted.
Seats and Wheelchair lifts	N/A	None noted.
Other	N/A	None noted.

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 was operated at a SLW in three different conditions using a smooth, straight and level roadway:

1. Accelerating at full throttle from a constant speed starting from 35 mph.
2. Accelerating at full throttle from standstill.
3. Stationary, with the engine at low idle, high idle, and wide-open throttle, where applicable. In addition, the bus was tested with and without the air conditioning operating.

The test site is at the Larson Transportation Institute Test Track and the test procedures were performed 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 was used to measure the noise level.

During the test, special attention was 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 outside ambient noise level of 43.9 dB(A), the average of the two highest readings obtained while accelerating from a constant speed was 67.3 dB(A) on the right side and 67.2 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 43.9 dB(A), the average of the two highest readings obtained were 76.7 dB(A) on the right side and 76.9 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 47.1 dB(A) at low idle and 61.2 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 44.8 dB(A) at low idle and 61.4 dB(A) at wide open throttle. The exterior ambient noise level measured during this test was 36.6 dB(A). This bus passed this section of the test.

EXTERIOR NOISE TEST DATA FORM

Accelerating from Constant Speed

Page 1 of 3

Bus Number: 2020-03		Date: 07/20/20	
Personnel: E.D., T.G. & F.T.			
Temperature (°F): 84		Humidity (%): 51	
Wind Speed (mph): 9		Wind Direction: West	
Barometric Pressure (inHg): 29.99			
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: 93.4 dB(A)			
Exterior Ambient Noise Level: 43.9 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	66.4	1	67.2
2	66.9	2	66.2
3	67.1	3	66.0
4	67.5	4	67.2
5	67.1	5	66.5
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 = 67.3 dB(A)		Average of two highest actual noise levels = 67.2 dB(A)	
Final Sound Level Meter Calibration Check: 93.4 dB(A)			
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM

Accelerating from Standstill

Page 2 of 3

Bus Number: 2020-03		Date: 07/20/2020	
Personnel: E.D., T.G. F.T.			
Temperature (°F): 84		Humidity (%): 51	
Wind Speed (mph): 10		Wind Direction: West	
Barometric Pressure (inHg): 29.99			
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: 93.4 dB(A)			
Exterior Ambient Noise Level: 43.9 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	76.1	1	75.3
2	76.7	2	76.1
3	76.7	3	75.5
4	76.4	4	76.7
5	76.6	5	77.0
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 = 76.7 dB(A)		Average of two highest actual noise levels = 76.9 dB(A)	
Final Sound Level Meter Calibration Check: 93.4 dB(A)			
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM

Stationary

Page 3 of 3

Bus Number: 2020-03		Date: 07/28/2020	
Personnel: E.D., T.G. & F.T.			
Temperature (°F): 82		Humidity (%): 55	
Wind Speed (mph): 5		Wind Direction: NW	
Barometric Pressure (inHg): 29.93			
Initial Sound Level Meter Calibration: 93.6 dB(A)			
Exterior Ambient Noise Level: 36.6 dB(A)			
Air Conditioning ON			
Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	600	47.9	46.3
High Idle	N/A	N/A	N/A
Wide Open Throttle	3000	62.1	60.3
Air Conditioning OFF			
Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	600	44.9	44.6
High Idle	N/A	N/A	N/A
Wide Open Throttle	3000	62.8	60.0
Final Sound Level Meter Calibration Check: 93.7 dB(A)			
Comments: None noted.			

7.2 EXTERIOR NOISE TESTS



TEST BUS UNDERGOING EXTERIOR NOISE TESTING

8.0 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 on an engine by itself on a dynamometer operating under the Federal Test Protocol.

The Bus Testing Center emissions test is a measurement of the gaseous engine emissions CO, CO₂, NO_x, HC and particulates (diesel vehicles) produced by a complete 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 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 the emissions of buses tested under a range of consistent operating conditions.

8-II. TEST DESCRIPTION

This test was 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 emissions laboratory provides capability for testing heavy-duty diesel, gasoline, 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 dilution tunnel and a constant volume sampling (CVS) emissions measurement 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 was performed as soon as practical 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, a medium average speed transient urban cycle (Figure 2), and the EPA HD-UDDS Cycle, which consists of urban and highway driving segments (Figure 3). An emissions test was comprised of two runs for each of the three different driving cycles, and the average values were reported. Test results reported include the average grams per mile value for each of the gaseous emissions of carbon dioxide, carbon monoxide, oxides of nitrogen, total hydrocarbons and non-methane hydrocarbons. In addition,

emissions of particulate matter will also be reported for diesel fuel 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.

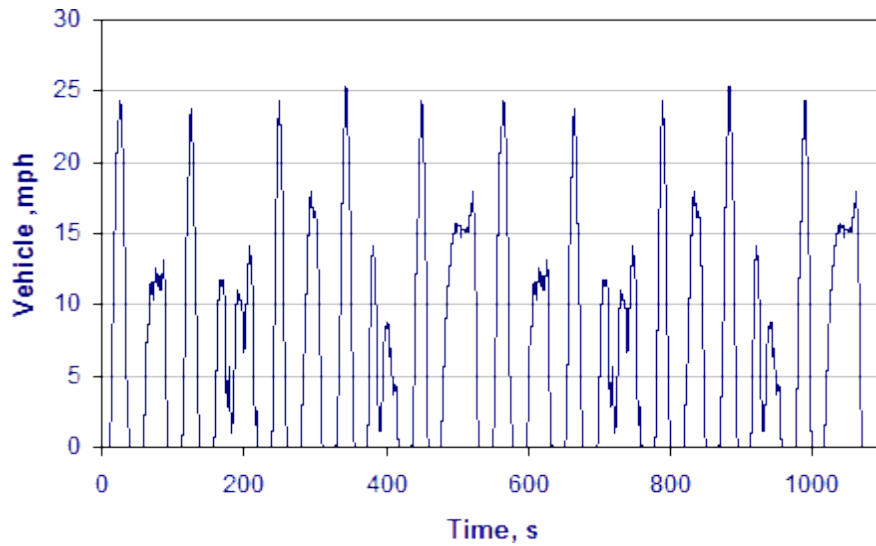


Figure 8.1. *Manhattan Driving Cycle (Duration 1089 sec, Maximum Speed 25.4 mph, Average Speed 6.8 mph)*

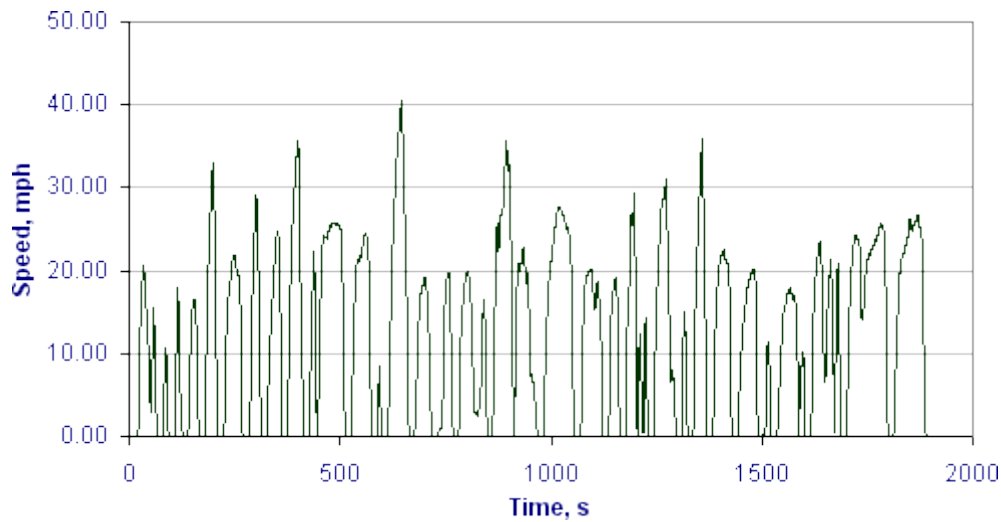


Figure 8.2. *Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41 mph, Average Speed 12 mph)*

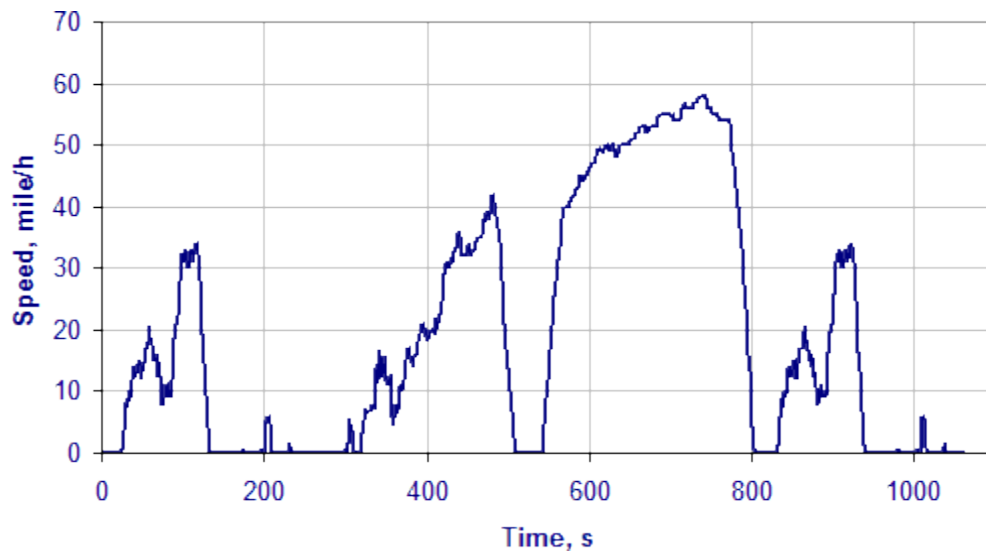


Figure 8.3. HD-UDDS Cycle (Duration 1060 seconds, Maximum Speed 58 mph, Average Speed 18.86 mph)

8-III. TEST ARTICLE

The test article is a BraunAbility / The Braun Corporation, Chrysler Pacifica / Voyager Commercial Wheelchair Accessible Vehicle w/Side-Entry Manual Foldout Ramp model transit bus equipped with a gasoline fueled Mopar FUA US LLC / 3.6L motor. The bus was tested on 09/28/2020 with the odometer reading 3,551 miles.

8-IV. TEST EQUIPMENT

Testing was 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 returned to 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 NO_x 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

The test bus was 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 is 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 the Emissions test. Both the Fuel Economy Pre-Test Maintenance Form and the Fuel Economy Pre-Test Inspection Form are found in section 6, Fuel Economy Test.

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 consisted of driving the bus for 20 minutes at approximately 40 mph on the chassis dynamometer. During emissions testing, the test driver followed the prescribed driving cycle by watching the speed trace and instructions on the Horiba Drivers-Aid monitor which is placed in front of the windshield. The CDCTS computer monitored the test and collected data for calculation of emissions at the end of the test.

This bus was tested for emissions at seated load weight. The emissions data was obtained at the following conditions:

1. Air conditioning off
2. Heater off
3. Defroster off
4. Exterior and interior lights on
5. Windows and Doors closed
6. Seated load weight

The test tanks or the bus fuel tank(s) were filled prior to the fuel economy test with gasoline.

8-VI. DISCUSSION

Table 8.1 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 8.1 Emissions Test Results

Test Completed at SLW: 5,830 lb.			
Driving Cycle	Manhattan	Orange County Bus	UDDS
CO₂, gm/mi	789	640	553
CO, gm/mi	1.35	1.04	1.1
THC, gm/mi	0.18	0.20	0.20
NMHC, gm/mi	0.06	0.04	0.05
NO_x, gm/mi	0	0	0
Particulates. gm/mi	N/A	N/A	N/A

8. EMISSIONS TEST



BUS TESTED ON CHASSIS DYNAMOMETER FOR PERFORMANCE, FUEL ECONOMY AND EMISSIONS

FEDERAL TRANSIT BUS TEST

**Performed for the Federal Transit Administration U.S. DOT
In accordance with CFR 49, Volume 7, Part 665**

**Manufacturer: Lone Star Handicap Vans, LLC
Model: Ram Promaster**

**Submitted for Testing in Service-Life Category
4 Year /100,000 Miles**

September 2016

Report Number: LTI-BT-R1607

PENNSTATE



**THE
LARSON
INSTITUTE**

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**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: Lone Star Handicap Vans, LLC

Manufacturer's address: 12953 Hwy 64 W
Tyler, TX 75704

Model: Ram Promaster

Submitted for Testing in Service-Life Category
4 Year /100,000 Miles

Report Number: LTI-BT-R1607





Quality Authorization

Director, Bus Research
and Testing Center

Title

9/7/16

Date

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EXECUTIVE SUMMARY

Lone Star Handicap Vans, LLC., submitted a model Ram Promaster, gasoline-powered eight seat (including the driver) 20-foot bus, for a 4 yr/100,000 mile STURAA test. The odometer reading at the time of delivery was 3,491 miles. Testing started on March 22, 2016 and was completed on August 12, 2016. 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 June 29, 2016.

The interior of the bus is configured with seating for eight passengers including the driver plus two wheelchair positions. Note: this test vehicle is not designed to standing passengers. The resulting potential load is eight persons plus two wheelchair positions. At 150 lbs per person, and 600 lbs per wheelchair position this load results in a measured gross vehicle weight of 8,770 lbs. Due to no standing passengers the first segment (GVW) and the second segment (SLW) of the Structural Durability Test were performed at the same weight of 8,770 lbs. The final segment was performed at a CW of 6,360 lbs. Durability driving resulted in unscheduled maintenance consisting of one failure. A description of this failure, 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, 2 or 4 failures. The one reported Class 3 failure was the result of both rear tires contacting the top of the wheel wells.

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 7.52 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 24.79' at 20 mph, 47.35' at 30 mph, 77.35' at 40 mph and 98.56' at 45 mph. The average stopping distance for the Uniform Low Friction Test was 28.06'. 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.

The Shakedown Test produced a maximum final loaded deflection of 0.105 inches with a permanent set ranging between -0.001 to 0.004 inches under a distributed static load of 4,200 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 vehicle submitted for testing was not equipped with any type of tow eyes or tow hooks, therefore the Static Towing Test was not performed. 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 3.8 inches.

A Fuel Economy Test was run on simulated central business district, arterial, and commuter courses. The results were 10.54 mpg, 11.03 mpg, and 20.62 mpg respectively; with an overall average of 12.43 mpg.

A series of Interior and Exterior Noise Tests was performed. These data are listed in Section 7.1 and 7.2 respectively.

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 Lone Star Handicap Vans, LLC, model Ram Promaster. The bus has O.E.M. driver's and front passenger doors rear of the front axle. The passenger door, equipped with a Lone Star Handicap Vans model PMR-03 manual fold-out handicap ramp is centered between the axles. The rear O.E.M. cargo door is centered at the rear. Power is provided by a gasoline-fueled, Chrysler model 3.6 L engine coupled to a Chrysler 6 – Speed Auto model 62TE transmission.

The measured curb weight is 3,310 lbs. for the front axle and 3,050 lbs for the rear axle. These combined weights provide a total measured curb weight of 6,360 lbs. There are eight seats including the driver plus two wheelchair positions. Note: the test vehicle is not designed for standing passengers. Gross load is 150 lbs. x 8 = 1,200 lbs. + 1,200 lbs. (2 wheelchair positions) = 2,400 lbs. At full capacity, the measured gross vehicle weight is 8,770 lbs.

VEHICLE DATA FORM

Page 1 of 7

Bus Number: 1607	Date: 3-22-16
Bus Manufacturer: Lone Star Handicap Vans, LLC.	Vehicle Identification Number (VIN): 3C6URVJGXFE520388
Model Number: Ram Promaster	Chassis Mfr./Mod.#: Ram Promaster 3500
Personnel: S.R. & T.G.	Starting Odometer Reading: 3491

WEIGHT:

Individual Wheel Reactions:

Weights (lb)	Front Axle		Middle Axle		Rear Axle	
	Curb	Street	Curb	Street	Curb	Street
CW	1,660	1,650	N/A	N/A	1,570	1,480
SLW	1,790	2,080	N/A	N/A	2,370	2,530
GVW	1,790	2,080	N/A	N/A	2,370	2,530

Total Weight Details:

Weight (lb)	CW	SLW	GVW	GAWR
Front Axle	3,310	3,870	3,870	4,629
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	3,050	4,900	4,900	5,291
Total	6,360	8,770	8,770	GVWR: 9,350

Dimensions:

Length (ft/in)	20 / 11.25
Width (in)	79.8
Height (in)	97.5
Front Overhang (in)	37.8
Rear Overhang (in)	54.2
Wheel Base (in)	159.25
Wheel Track (in)	Front: 71.5
	Middle: N/A
	Rear: 70.5

VEHICLE DATA FORM

Page 2 of 7

Bus Number: 1607	Date: 3-22-16

CLEARANCES:

Lowest Point Outside Front Axle	Location: Engine cover	Clearance(in): 8.1
Lowest Point Outside Rear Axle	Location: Muffler	Clearance(in): 11.3
Lowest Point between Axles	Location: Exhaust pipe	Clearance(in): 6.2
Ground Clearance at the center (in)	7.0	
Front Approach Angle (deg)	17.4	
Rear Approach Angle (deg)	16.0	
Ramp Clearance Angle (deg)	4.4	
Aisle Width (in)	37.0	
Inside Standing Height at Center Aisle (in)	84.4	

BODY DETAILS:

Body Structural Type	Semi-monocoque		
Frame Material	Steel		
Body Material	Steel		
Floor Material	Steel		
Roof Material	Steel		
Windows Type	☒ Fixed	☐ Movable	
Window Mfg./Model No.	CRL / AS3 M4 04 / FW387LF		
Number of Doors	<u>2</u> Front	<u>1</u> Rear	<u>1</u> Passenger
Mfr. / Model No.	Driver's & Passenger FCA / O.E.M.	FCA / O.E.M.	FCA / O.E.M.
Dimension of Each Door (in)	Driver - 60.0 x 29.5 Pass. - 59.5 x 29.2	69.0 x 61.5	73.6 x 35.1
Passenger Seat Type	☐ Cantilever	☒ Pedestal	☐ Other (explain)
Driver Seat Type	☐ Air	☒ Spring	☐ Other (explain)
Mfr. / Model No.	Chrysler / O.E.M.		
Number of Seats (including Driver)	8 + 2 wheelchair positions		

VEHICLE DATA FORM

Page 3 of 7

Bus Number: 1607	Date: 3-22-16

BODY DETAILS (Contd.)

Free Floor Space (ft ²)	N/A
Height of Each Step at Normal Position (in)	Front 1. <u>11.9</u> 2. <u>N/A</u> 3. <u>N/A</u> 4. <u>N/A</u>
	Middle 1. <u>N/A</u> 2. <u>N/A</u> 3. <u>N/A</u> 4. <u>N/A</u>
	Rear 1. <u>N/A</u> 2. <u>N/A</u> 3. <u>N/A</u> 4. <u>N/A</u>
Step Elevation Change - Kneeling (in)	N/A

ENGINE

Type	☐ C.I.	☐ Alternate Fuel	
	☒ S.I.	☐ Other (explain)	
Mfr. / Model No.	Chrysler / 3.6 L		
Location	☒ Front	☐ Rear	☐ Other (explain)
Fuel Type	☒ Gasoline	☐ CNG	☐ Methanol
	☐ Diesel	☐ LNG	☐ Other (explain)
Alternator (Generator) Mfr. / Model No.	Denso / MX421000		
Maximum Rated Output (Volts / Amps)	12 / 180		
Air Compressor Mfr. / Model No.	N/A		
Maximum Capacity (ft ³ / min)	N/A		
Starter Type	☒ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Denso / 04S16		

VEHICLE DATA FORM

Page 4 of 7

Bus Number: 1607	Date: 3-22-16

TRANSMISSION

Transmission Type	☐ Manual	☒ Automatic	☐ Load Sensing Adaptive
Mfr. / Model No.	Chrysler / 6-Speed Auto 62TE		
Control Type	☒ Mechanical	☐ Electrical	☐ Other
Integral Retarder	☐ Yes	☒ No	

SUSPENSION

Number of Axles	2		
Front Axle Type	☒ Independent	☐ Beam Axle	
Mfr. / Model No.	FCA / O.E.M.		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☒ Spring	☐ Other (explain)
No. of Shock Absorbers	2 (struts)		
Mfr. / Model No.	FCA / O.E.M.		
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.	FCA / O.E.M.		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☒ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Cofap / GL13572CEY-68157782AD		

VEHICLE DATA FORM

Page 5 of 7

Bus Number: 1607	Date: 3-22-16

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Fumagalli / 6.0 x 16
	Tire Mfr./ Model No.	Nexen / Roadian 225 75R 16
Rear	Wheel Mfr./ Model No.	Fumagalli / 6.0 x 16
	Tire Mfr./ Model No.	Nexen / Roadian 225 75R 16

BRAKES

Front Axle Brakes Type	☐ Cam	☒ Disc	☐ Other (explain)
Mfr. / Model No.	FCA / O.E.M.		
Middle Axle Brakes Type	☐ Cam	☐ Disc	☐ Other (explain)
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	☐ Cam	☒ Disc	☐ Other (explain)
Mfr. / Model No.	FCA / O.E.M.		

HVAC

Heating System Type	☐ Air	☒ Water	☐ Other
Capacity (Btu/hr)	52,000		
Mfr. / Model No.	ACCClimate / N/A		
Air Conditioner	☒ Yes	☐ No	
Location	Dash		
Capacity (Btu/hr)	35,000		
A/C Compressor Mfr. / Model No.	Design Press / 75BH17C		

STEERING

Steering Gear Box Type	Hydraulic gear / rack & pinion		
Mfr. / Model No.	FCA / O.E.M.		
Steering Wheel Diameter	15.4"		
Number of turns (lock to lock)	3.75		
Control Type	☐ Electric	☒ Hydraulic	☐ Other (explain)

VEHICLE DATA FORM

Page 6 of 7

Bus Number: 1607	Date: 3-22-16

OTHERS

Wheel Chair Ramps	Location: Right passenger door	Type: Manual bi-fold
Wheel Chair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	Lone Star Handicap Vans / PMR-03	
Emergency Exit	Location: Doors Window	Number: 4 1

CAPACITIES

Fuel Tank Capacity (gallons)	24
Engine Crankcase Capacity (quarts)	5
Transmission Capacity (quarts)	12
Differential Capacity (gallons)	Not available.
Cooling System Capacity (quarts)	11
Power Steering Fluid Capacity (pints)	4.2

Page 7 of 7

Date: 3-22-16

[illegible]

COMPONENT/SUBSYSTEM INSPECTION FORM

Page 1 of 1

Bus Number: 1607	Date: 3-22-16

Subsystem	Checked	Initials	Comments
Air Conditioning Heating and Ventilation	✓	S.R.	None noted
Body and Sheet Metal	✓	S.R.	None noted
Frame	✓	S.R.	None noted
Steering	✓	S.R.	None noted
Suspension	✓	S.R.	None noted
Interior/Seating	✓	S.R.	None noted
Axles	✓	S.R.	None noted
Brakes	✓	S.R.	None noted
Tires/Wheels	✓	S.R.	None noted
Exhaust	✓	S.R.	None noted
Fuel System	✓	S.R.	None noted
Power Plant	✓	S.R.	None noted
Accessories	✓	S.R.	None noted
Lift System	✓	S.R.	None noted
Interior Fasteners	✓	S.R.	None noted
Batteries	✓	S.R.	None noted

CHECK - IN



LONE STAR HANDICAP VANS, LLC. MODEL RAM PROMASTER



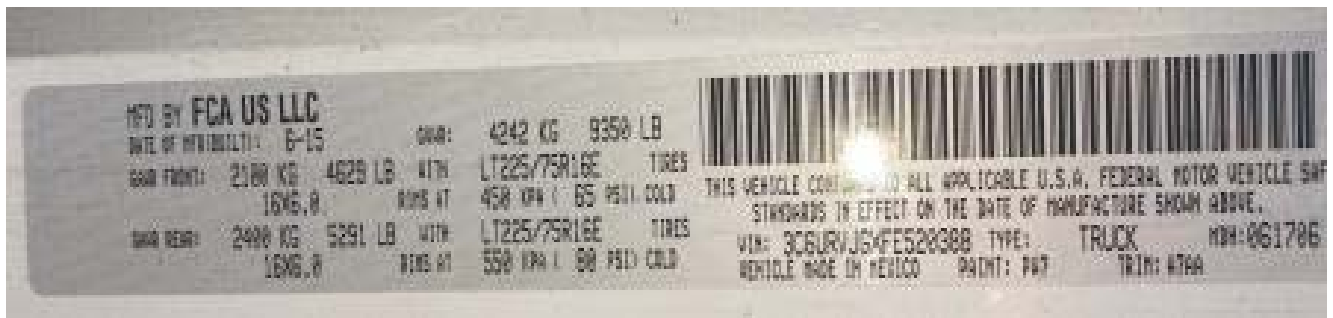
CHECK - IN CONT.



**LONE STAR HANDICAP VANS, LLC.
MODEL RAM PROMASTER EQUIPPED WITH A LONE STAR
MODEL PMR-03 FOLD-OUT HANDICAP RAMP**



CHECK - IN CONT.



VIN TAG



OPERATOR'S AREA

CHECK - IN CONT.



INTERIOR FORWARD



INTERIOR REAR

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

Page 1 of 2

Bus Number: 1607	Date: 8-10-16

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	N/A	None noted.
Leveling Valves	N/A	None noted.
Grease Fittings	N/A	None noted.

ACCESSIBILITY DATA FORM

Page 2 of 2

Bus Number: 1607	Date: 8-10-16

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	✓	None noted.
Lighting	✓	None noted.
MISCELLANEOUS :		
Brakes	✓	None noted.
Handicap Lifts/Ramps	✓	None noted.
Instruments	✓	None noted.
Axles	✓	None noted.
Exhaust	✓	None noted.
Fuel System	✓	None noted.
OTHERS :		

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
 4. Brake adjustments
 5. Lubrication
 6. 3,000 mi (or equivalent) inspection

7. Oil and filter change inspection
8. Major inspection
9. 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 1)
SCHEDULED MAINTENANCE
LONE STAR 1607

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
04-15-16	949	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
05-31-16	2,022	P.M./Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
06-24-16	3,473	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
08-03-16	3,800	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

At the end of the test, the remaining items on the list were removed and replaced. The transmission assembly took 10.00 man-hours (two men 5.00 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.

During the test, no other additional components were removed for repair or replacement.

REPLACEMENT AND/OR REPAIR FORM

Page 1 of 1

Subsystem	Replacement Time
Transmission	10.00 man hours
Wiper Motor	1.00 man hours
Starter	0.50 man hours
Alternator	2.50 man hours
Batteries	0.50 man hours

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS



TRANSMISSION REMOVAL AND REPLACEMENT (10.00 MAN HOURS)



WIPER MOTOR REMOVAL AND REPLACEMENT (1.00 MAN HOURS)

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.



STARTER REMOVAL AND REPLACEMENT (0.50 MAN HOURS)



ALTERNATOR REMOVAL AND REPLACEMENT (2.50 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, 2 or 4 failures. The one reported Class 3 failure was the result of the rear tires contacting the wheel wells. This failure is available for review in the Unscheduled Maintenance List, located in Section 5.7 Structural Durability.

RELIABILITY DATA FORM

Bus Number: 1607	Date Completed: 6-29-16
Personal: B.R.	

[illegible]

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 80 foot lane change areas 80 feet apart. The bus will begin in one lane, change to the other lane in a 80 foot span, travel 80 feet, and return to the original lane in another 80 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

Page 1 of 1

Bus Number: 1607	Date: 5-3-16
Personnel: T.S. & S.R.	

Temperature (°F): 53	Humidity (%): 90
Wind Direction: NE	Wind Speed (mph): 6
Barometric Pressure (in.Hg): 29.90	

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 test vehicle maintained a safe profile throughout the test.	
Comments of the tire/ground contact patch:	
Tire / ground contact was maintained through all portions of testing.	

3. SAFETY



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 7.52 seconds.

PERFORMANCE DATA FORM

Page 1 of 1

Bus Number: 1607		Date: 5-3-16	
Personnel: T.S. & S.R.			
Temperature (°F): 53		Humidity (%): 94	
Wind Direction: N		Wind Speed (mph): 2	
Barometric Pressure (in.Hg): 29.90			
			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	1.70	1.32	1.41
20 mph	2.89	2.78	2.83
30 mph	4.69	4.58	4.40
40 mph	6.69	6.48	5.99
Top Test Speed(mph) 50	8.11	7.91	7.48
Clockwise Recorded Interval Times			
Speed	Run 1	Run 2	Run 3
10 mph	1.28	1.41	1.40
20 mph	2.79	2.69	2.72
30 mph	3.98	4.40	4.38
40 mph	5.58	5.87	6.02
Top Test Speed(mph) 50	7.07	7.32	7.20

PERFORMANCE SUMMARY SHEET

BUS MANUFACTURER:Lone Star Handicap Vans, LLC
 BUS MODEL:Ram Promaster

BUS NUMBER:1607
 TEST DATE:5/3/16

TEST CONDITIONS :

 TEMPERATURE (DEG F) : 53.0
 WIND DIRECTION : N
 WIND SPEED (MPH) : 2.0
 HUMIDITY (%) : 94
 BAROMETRIC PRESSURE (IN. HG) : 29.9

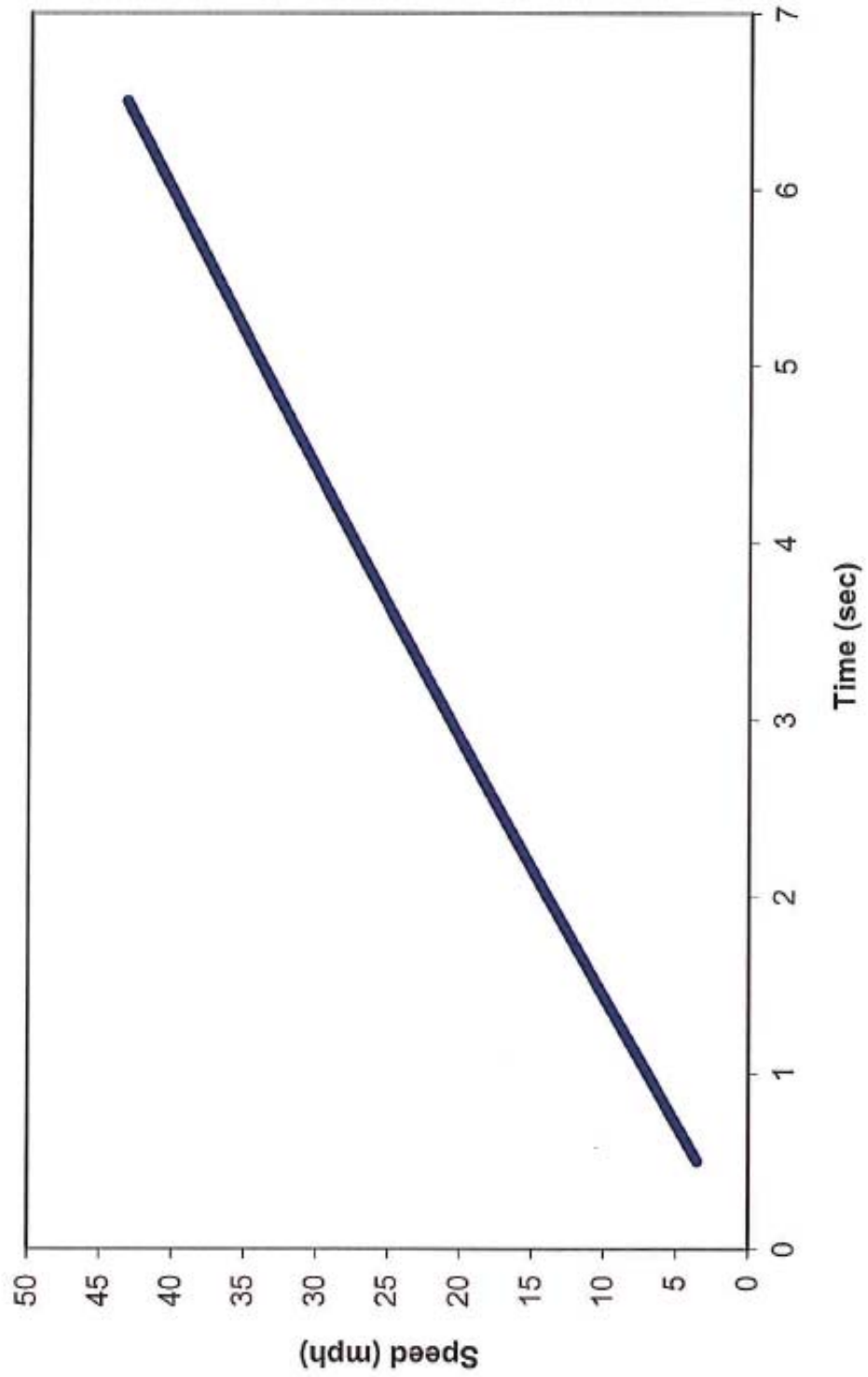
(MPH)	AVERAGE TIME (SEC)		
	CCW DIRECTION	CW DIRECTION	TOTAL
10.0	1.48	1.36	1.42
20.0	2.83	2.73	2.78
30.0	4.56	4.25	4.40
40.0	6.39	5.82	6.11
50.0	7.83	7.20	7.52

TEST SUMMARY :

VEHICLE SPEED (MPH)	TIME (SEC)	ACCELERATION (FT/SEC^2)	MAX. GRADE (%)
1.0	.14	10.4	34.3
5.0	.70	10.3	33.9
10.0	1.42	10.2	33.3
15.0	2.15	10.0	32.7
20.0	2.89	9.8	32.1
25.0	3.64	9.7	31.5
30.0	4.40	9.5	31.0
35.0	5.18	9.4	30.4
40.0	5.97	9.2	29.8
45.0	6.77	9.0	29.2
50.0	7.59	8.9	28.7

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 vs. Time
Lone Star Handicap Vans, LLC Bus #1607



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 24.79' at 20 mph, 47.35' at 30 mph, 77.35' at 40 mph and 98.56' at 45 mph. The average stopping distance for the Uniform Low Friction Test was 28.06'. 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

Page 1 of 3

Bus Number: 1607	Date: 4-14-16
Personnel: T.S., S.R. & P.D.	
Amb. Temperature (°F): 47	Wind Speed (mph): 5
Wind Direction: N	Pavement Temp (°F) Start: 64 End: 78

TIRE INFLATION PRESSURE (psi):				
Tire Type: Front: Nexen Roadian CT8 HL / 225 / 75R 16				
Rear: Nexen Roadian CT8 HL / 225 / 75R 16				
	Left Tire(s)		Right Tire(s)	
Front	65		65	
	Inner	Outer	Inner	Outer
Rear	N/A	N/A	N/A	N/A
Rear	N/A	80	N/A	80

AXLE LOADS (lb)		
	Left	Right
Front	2,080	1,790
Rear	2,530	2,370

Table 4.2-7. Record of All Braking System Faults/Repairs.

Page 2 of 3

Date	Fault/Repair	Description
4-14-16	T.S., S.R. & P.D	None noted.

Table 4.2-8.1. Stopping Distance Test Results Form

Page 3 of 3

Stopping Distance (ft)					
Vehicle Direction	CW	CW	CCW	CCW	
Speed (mph)	Stop 1	Stop 2	Stop 3	Stop 4	Average
20 (dry)	26.92	23.52	24.61	24.11	24.79
30 (dry)	47.50	46.87	45.82	49.19	47.35
40 (dry)	80.35	77.62	75.71	75.70	77.35
45 (dry)	97.59	98.03	102.30	96.30	98.56
20 (wet)	28.58	29.90	29.22	24.53	28.06

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	N/A
	2	Yes	N/A
Drivers side on low friction	1	Yes	N/A
	2	Yes	N/A

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

Parking Brake Test



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 8 people including the driver plus 2 wheelchair positions. The resulting test load is $8 \times 375 \text{ lbs.} = 3,000 \text{ lb.} + 1,200 \text{ lbs (2 wheelchair positions)} = 4,200 \text{ lbs.}$ 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 0.105 Inches at reference point 5. The maximum permanent deflection after the final loading sequence ranged from -0.001 Inches at reference point 4 to 0.004 inches at reference point 6.

STRUCTURAL SHAKEDOWN DATA FORM

Page 1 of 2

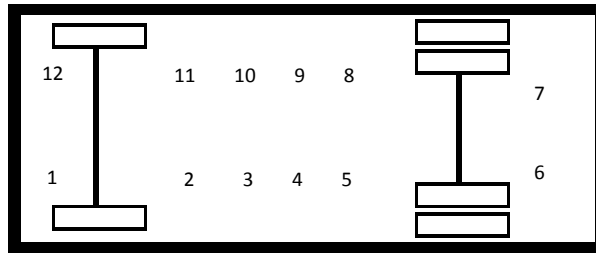
Bus Number: 1607	Date: 3-28-16
Personnel: E.D., E.L., T.G. & J.P.	Temperature (°F): 64
Loading Sequence: ☒ 1 ☐ 2 ☐ 3 (check one)	
Test Load (lbs): 4,200 (8 seated + 2 W/C)	

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	.016	.016	-.002	-.002
2	0	.069	.069	.012	.012
3	0	.093	.093	.018	.018
4	0	.100	.100	.009	.009
5	0	.127	.127	.025	.025
6	0	.094	.094	.028	.028
7	0	.007	.007	.007	.007
8	0	.065	.065	.014	.014
9	0	.055	.055	.015	.015
10	0	.031	.031	.009	.009
11	0	.016	.016	.007	.007
12	0	.001	.001	.002	.002

STRUCTURAL SHAKEDOWN DATA FORM

Page 2 of 2

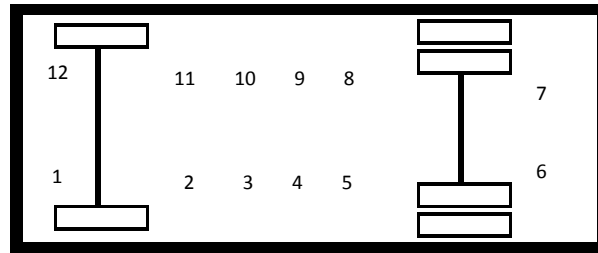
Bus Number: 1607	Date: 3-28-16
Personnel: E.D., E.L., T.G. & J.P.	Temperature (°F): 63
Loading Sequence: ☐ 1 ☒ 2 ☐ 3 (check one) Test Load (lbs): 4,200 (8 seated + 2 W/C)	

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	-.002	.017	.019	-.002	.000
2	.012	.069	.057	.012	.000
3	.018	.095	.077	.020	.002
4	.009	.098	.089	.008	-.001
5	.025	.130	.105	.028	.003
6	.028	.095	.067	.032	.004
7	.007	.007	.000	.008	.001
8	.014	.067	.053	.016	.002
9	.015	.060	.045	.018	.003
10	.009	.050	.041	.010	.001
11	.007	.016	.009	.007	.000
12	.002	.000	-.002	.002	.000

5.1 STRUCTURAL SHAKEDOWN TEST



DIAL INDICATORS IN POSITION



**BUS LOADED TO 2.5 TIMES GVL
(4,200 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, steering and handicapped devices 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)

Page 1 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)

Page 2 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 3 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 4 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 5 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 6 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 7 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 8 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 9 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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)
 Page 10 of 10

Bus Number: 1607	Date: 3-29-16
Personnel: S.R., E.D., 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



LEFT 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 test bus submitted for testing was not equipped with any type of tow eyes or tow hook, therefore the Static Towing Test was not performed.

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

Page 1 of 1

Bus Number: 1607	Date: 7-28-16
Personnel: T.S. & E.D.	

Temperature (°F): 78	
Wind Direction: SSW	Wind Speed (mph): 1

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: No problems with the towing interface or towing procedures was encountered.

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 3.8 inches to 13.3 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	9.0"
Rear axle – one tire flat	13.2"
Rear axle – two tires flat	NA

JACKING TEST DATA FORM

Page 1 of 1

Bus Number: 1607	Date: 3-24-16
Personnel: E.D. & S.R.	Temperature (°F): 62

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	11.8 " I 9.0 " D	9.4 " I 6.4 " D	Body & axle
Left front	12.0 " I 9.2 " D	9.4 " I 6.4 " D	Body & axle
Right rear—outside	15.8 " I 13.2 " D	6.9 " I 3.8 " D	Body & axle
Right rear—both	N/A	N/A	N/A
Left rear—outside	15.8 " I 13.3 " D	7.0 " I 3.9 " D	Body & axle
Left rear—both	N/A	N/A	N/A
Right middle or tag—outside	N/A	N/A	N/A
Right middle or tag—both	N/A	N/A	N/A
Left middle or tag—outside	N/A	N/A	N/A
Left middle or tag—both	N/A	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

Page 1 of 1

Bus Number: 1607	Date: 3-24-16
Personnel: S.R. & E.D.	Temperature (°F): 65

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:
This vehicle is not equipped with a tag axle.
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 3,800 miles; approximately 2,500 miles on the PSBRTF Durability Test Track and approximately 1,300 miscellaneous other miles. The test will be conducted with the bus operated under three different loading conditions. The first segment will consist of approximately 1,500 miles with the bus operated at GVW. The second segment will consist of approximately 800 miles with the bus operated at SLW. The remainder of the test, approximately 1,500 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 June 29, 2016. The first 1,500 miles were performed at a GVW of 8,770 lbs. and completed on April 19, 2016. Note: this test vehicle is not designed to accommodate standing passengers; therefore, GVW and SLW were performed at the same weight. The next 800 mile SLW segment was performed at the same 8,770 lbs and completed on May 31, 2016, and the final 1,500 mile segment was performed at a CW of 6,360 lbs and completed on June 29, 2016.

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.

Lone Star Handicap Vans, LLC Bus #1607
MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
03/28/16 TO 04/03/16	158.00	57.00	215.00
04/04/16 TO 04/10/16	0.00	49.00	49.00
04/11/16 TO 04/17/16	590.00	188.00	778.00
04/18/16 TO 04/24/16	542.00	23.00	565.00
04/25/16 TO 05/01/16	42.00	2.00	44.00
05/02/16 TO 05/08/16	0.00	102.00	102.00
05/09/16 TO 05/15/16	122.00	53.00	175.00
05/16/16 TO 05/22/16	0.00	0.00	0.00
05/23/16 TO 05/29/16	0.00	46.00	46.00
05/30/16 TO 06/05/16	407.00	66.00	473.00
06/06/16 TO 6/12/2016	593.00	33.00	626.00
06/13/16 TO 6/19/2016	0.00	400.00	400.00
06/20/16 TO 06/26/16	0.00	0.00	0.00
06/27/16 TO 07/03/16	46.00	282.00	328.00
TOTAL	2500.00	1301.00	3801.00

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
Shift 2	7:50 am	F
	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
Shift 3	3:40 pm	C
	3:50 pm	F
	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

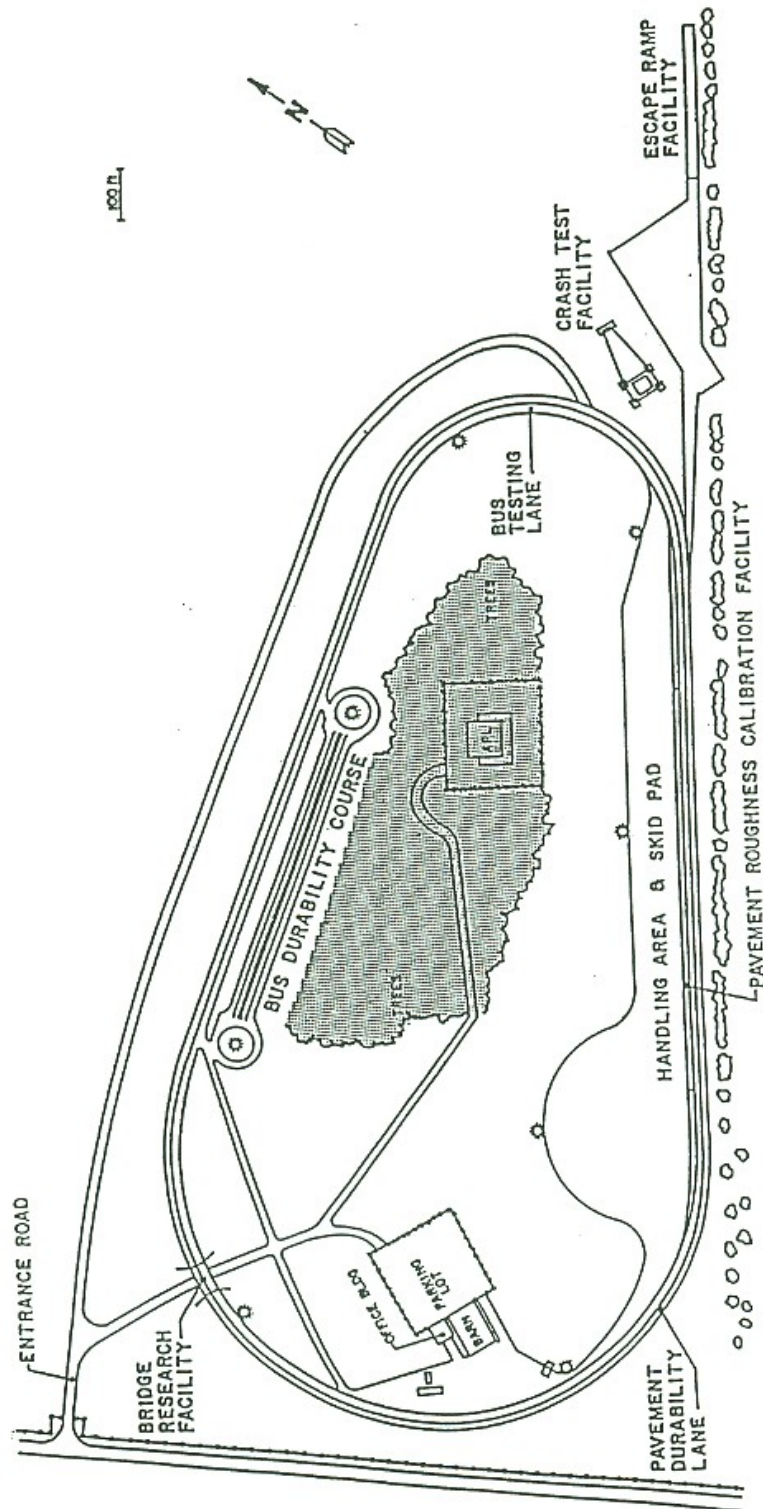
B—Break

C—Cycle all systems five times, visual inspection, driver's log entries

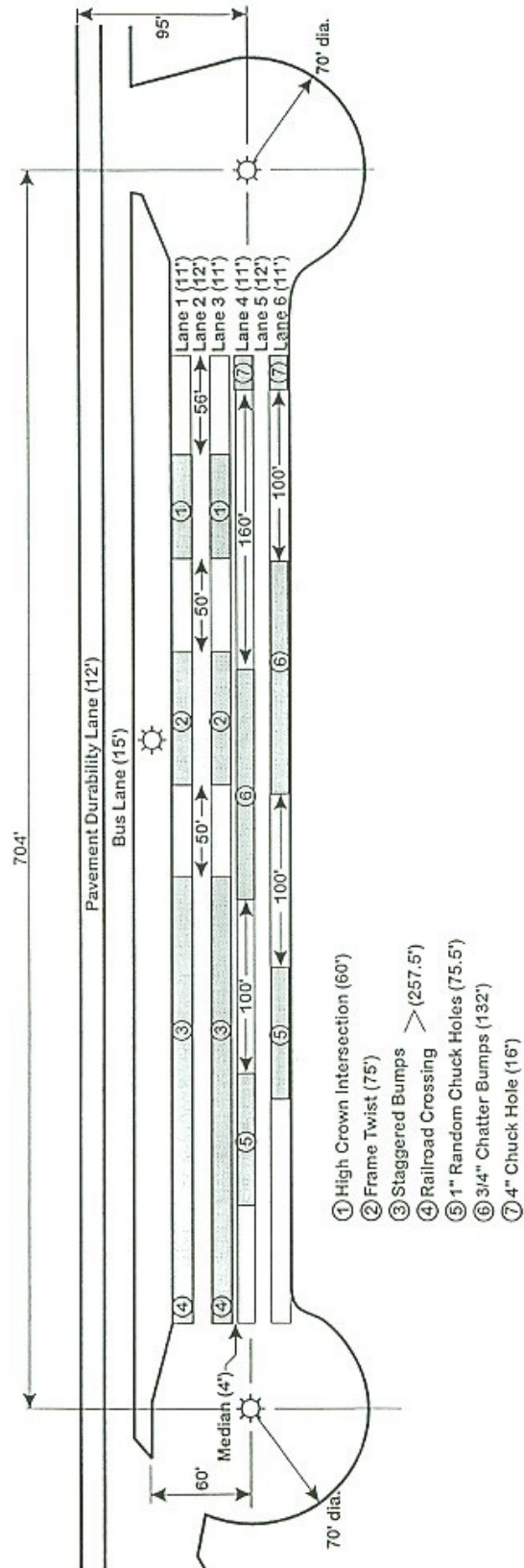
D—Drive bus as specified by procedure

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**

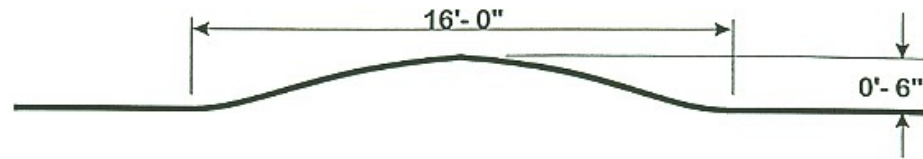


Plan View

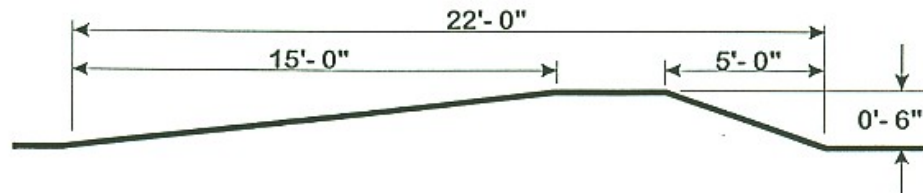
Vehicle Durability Test Track

The Pennsylvania Transportation Institute
Penn State

Staggered
Bumps
(10 mph)



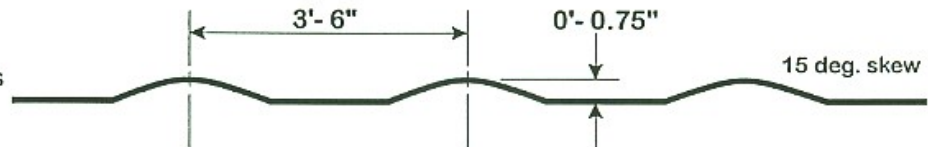
Railroad
Crossing
(8 mph)



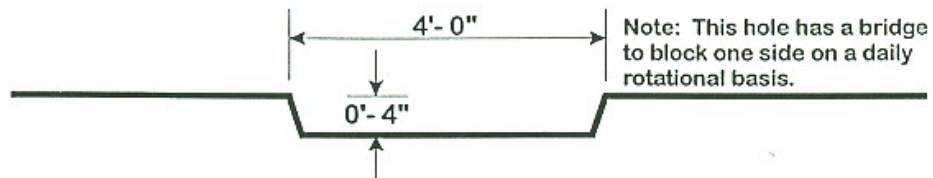
1" Random
Chuck Holes
(20 mph)



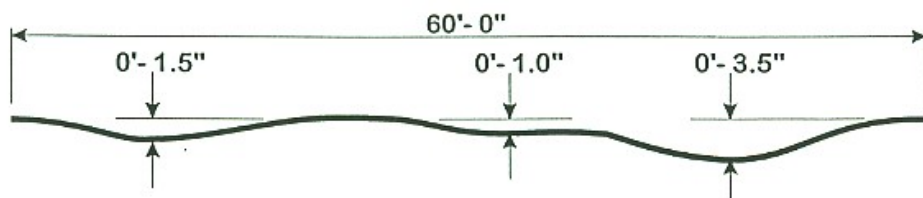
Chatter Bumps
(20 mph)



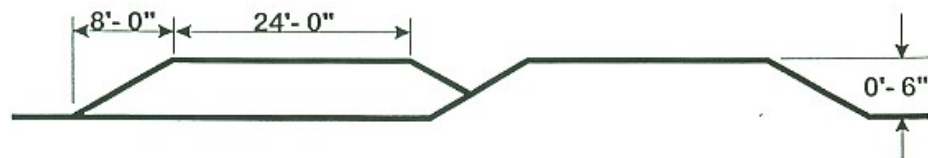
4" Chuck Hole
(5 mph)



High Crown
Intersection
(20 mph)



Frame Twist
(10 mph)



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

(Page 1 of 1)
UNSCHEDULED MAINTENANCE
LONE STAR 1607

DATE	TEST MILES	SERVICE	ACTIVITY	MAN HOURS	DOWN TIME
04-08-16	215	The rear wheels are contacting the top of the wheel well.	Wheel well cut out and raised 1 5/8".	4.00	4.00

UNSCHEDULED MAINTENANCE



**REAR WHEELS CONTACTING WHEEL WELL
(215 TEST MILES)**



**WHEEL WELL CUT OUT AND RAISED.
(215 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

$$\text{FEO}_{\text{mi/lb}} = \text{Observed fuel economy} = \frac{\text{miles}}{\text{lb of fuel}}$$

- 2.) Convert the observed fuel economy to miles per gallon [mpg] by multiplying by the specific gravity of the test fuel G_s (referred to water) at 60°F and multiply by the density of water at 60°F

$$FE_{\text{mpg}} = FE_{\text{Cmi/lb}} \times G_s \times G_w$$

where G_s = Specific gravity of test fuel at 60°F (referred to water)
 G_w = 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.

$$FE_c = FE_{\text{mpg}} \times \frac{Q}{H}$$

where

H = Volumetric heating value of test fuel [BTU/gal]
 Q = Volumetric heating value of standard reference fuel

Combining steps 1-3 yields

$$\Rightarrow FE_c = \frac{\text{miles}}{\text{lbs}} \times (G_s \times G_w) \times \frac{Q}{H}$$

- 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/BTUx10⁶.

Eq = Energy equivalent of converting mpg to mile/BTUx10⁶.

$$Eq = ((\text{mpg})/(H)) \times 10^6$$

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 $T=60^\circ\text{F}$). These combine to give a fuel economy in miles per lb. The energy equivalent (mile/BTUx10⁶) 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.

<u>phase</u>	<u>miles per phase</u>	<u>total miles per run</u>
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$$\text{FEO}_{\text{mi/scf}} = \text{Observed fuel economy} = \frac{\text{miles}}{\text{scf of fuel}}$$

- 2.) Convert the observed fuel economy to miles per lb by dividing FEO by the density of the test fuel at standard conditions (Lb/ft³).

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.

$$\text{FEO}_{\text{mi/lb}} = \text{FEO} / \text{Gm}$$

where Gm = Density of test fuel at standard conditions

- 3.) Convert the observed fuel economy (FEO_{mi/lb}) to an energy equivalent of (miles/BTUx10⁶) by dividing the observed fuel economy (FEO_{mi/lb}) by the heating value of the test fuel at standard conditions.

$$\text{Eq} = ((\text{FEO}_{\text{mi/lb}})/\text{H}) \times 10^6$$

where

Eq = Energy equivalent of miles/lb to mile/BTUx10⁶

H = Volumetric heating value of test fuel at standard conditions

6-III. DISCUSSION

This is a comparative test of fuel economy using gasoline fuel with a heating value of 19,303 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 – 10.54 mpg, ART – 11.03 mpg, and COM – 20.62 mpg. Average fuel consumption at idle was 0.44 gph.

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 1 of 3

Bus Number: 1607	Date: 6-24-16	SLW (lbs): 8,770
Personnel: T.S., E.D. & T.G.		

FUEL SYSTEM	OK
Install fuel measurement system	✓
Replace fuel filter	✓
Check for fuel leaks	✓
Specify fuel type (refer to fuel analysis)	Gasoline
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

Page 2 of 3

Bus Number: 1607	Date: 6-24-16
Personnel: T.S., E.D. & P D.	
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	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Page 3 of 3

Bus Number: 1607	Date: 6-24-16
Personnel: T.S., E.D. & P.D.	
EXHAUST/EMISSION SYSTEM	OK
Check for exhaust leaks	✓
Remarks: None noted.	
ENGINE	OK
Replace air filter	✓
Inspect air compressor and air system	N/A
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

Page 1 of 1

Bus Number: 1607	Date: 6-27-16
Personnel: T.S., E.D., T.G. & M.R.	
PRE WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	E.D.
Cold tire pressure (psi): Front <u>75</u> Middle <u>N/A</u> Rear <u>90</u>	M.R.
Engine oil level	M.R.
Engine coolant level	M.R.
Interior and exterior lights on, evaporator fan on	M.R.
Fuel economy instrumentation installed and working properly.	E.D.
Fuel line -- no leaks or kinks	E.D.
Speed measuring system installed on bus. Speed indicator installed in front of bus and accessible to TECH and Driver.	E.D.
Bus is loaded to SLW	E.D.
WARM-UP	If OK, Initial
Bus driven for at least one hour warm-up	E.D.
No extensive or black smoke from exhaust	E.D.
POST WARM-UP	If OK, Initial
Warm tire pressure (psi): Front <u>75</u> Middle <u>N/A</u> Rear <u>90</u>	E.D.
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	E.D.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Page 1 of 4

Bus Number: 1607		Manufacturer: Lone Star		Date: 6-27-16			
Run Number: 1		Personnel: T.S., E.D. & M.R.					
Test Direction: ☐ CW or ☒ CCW		Temperature (°F): 77		Humidity (%): 69			
SLW (lbs): 8,770		Wind Speed (mph) & Direction: 6 / SW		Barometric Pressure (in. Hg): 30.05			
Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish			Start	Finish	
CBD #1	0	8:35	8:35	27.2	0	.188	.188
ART #1	0	3:59	3:59	28.8	0	.183	.183
CBD #2	0	8:28	8:28	29.5	0	.190	.190
ART #2	0	3:58	3:58	30.3	0	.181	.181
CBD #3	0	8:27	8:27	29.8	0	.187	.187
COMMUTER	0	6:00	6:00	31.0	0	.194	.194
Total Fuel = 1.123 gals							
20 minute idle : Total Fuel Used = .154 gals							
Heating Value = 19,303 BTU/LB							
Comments: None noted.							

FUEL ECONOMY DATA FORM (Liquid Fuels)

Page 2 of 4

Bus Number: 1607		Manufacturer: Lone Star		Date: 6-27-16	
Run Number: 2		Personnel: T.S., E.D. & M.R.			
Test Direction: ☒ CW or ☐ CCW		Temperature (°F): 81		Humidity (%): 69	
SLW (lbs): 8,770		Wind Speed (mph) & Direction: 1 / SW		Barometric Pressure (in.Hg): 30.05	

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish			Start	Finish	
CBD #1	0	8:34	8:34	28.3	0	.184	.184
ART #1	0	3:57	3:57	27.9	0	.181	.181
CBD #2	0	8:32	8:32	29.4	0	.185	.185
ART #2	0	3:59	3:59	28.2	0	.181	.181
CBD #3	0	8:28	8:28	29.5	0	.185	.185
COMMUTER	0	6:04	6:04	28.7	0	.184	.184
Total Fuel = 1,100 gals							

20 minute idle : Total Fuel Used = N/A gals	
Heating Value = 19,303 BTU/LB	
Comments: None noted.	

FUEL ECONOMY DATA FORM (Liquid Fuels)

Page 3 of 4

Bus Number: 1607		Manufacturer: Lone Star		Date: 7-8-16			
Run Number: 3		Personnel: S.R., T.S. & M.R.					
Test Direction: ☐ CW or ☒ CCW		Temperature (°F): 75		Humidity (%): 80			
SLW (lbs): 8,770		Wind Speed (mph) & Direction: 2 / N		Barometric Pressure (in. Hg): 29.90			
Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish			Start	Finish	
CBD #1	0	8:29	8:29	28.3	0	.194	.194
ART #1	0	3:55	3:55	28.5	0	.177	.177
CBD #2	0	8:26	8:26	29.7	0	.193	.193
ART #2	0	3:57	3:57	29.9	0	.179	.179
CBD #3	0	8:29	8:29	32.4	0	.190	.190
COMMUTER	0	5:58	5:58	31.5	0	.191	.191
Total Fuel = 1.124 gals							
20 minute idle : Total Fuel Used = N/A gals							
Heating Value = 19,303 BTU/LB							
Comments: None noted.							

FUEL ECONOMY DATA FORM (Liquid Fuels)

Page 4 of 4

Bus Number: 1607		Manufacturer: Lone Star		Date: 7-8-16			
Run Number: 4		Personnel: S.R., T.S. & M.R.					
Test Direction: ☒ CW or ☐ CCW		Temperature (°F): 81		Humidity (%): 68			
SLW (lbs): 8,770		Wind Speed (mph) & Direction: 11/WSW		Barometric Pressure (in. Hg): 29.90			
Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Flow Meter Reading (gals)		Fuel Used (gals)
	Start	Finish			Start	Finish	
CBD #1	0	8:26	8:26	30.4	0	.197	.197
ART #1	0	3:56	3:56	31.6	0	.190	.190
CBD #2	0	8:25	8:25	30.6	0	.196	.196
ART #2	0	3:55	3:55	31.2	0	.183	.183
CBD #3	0	8:21	8:21	31.0	0	.194	.194
COMMUTER	0	6:00	6:00	31.5	0	.211	.211
Total Fuel = 1.171 gals							
20 minute idle : Total Fuel Used = .151 gals							
Heating Value = 19,303 BTU/LB							
Comments: None noted.							

FUEL ECONOMY SUMMARY SHEET

BUS MANUFACTURER: Lone Star
 BUS MODEL : 3500
 FUEL TYPE : GASOLINE
 SP. GRAVITY : .7382
 HEATING VALUE : 19303.00 BTU/Lb
 FUEL TEMPERATURE : 86.00 deg F
 Standard Conditions: 60 deg F and 14.7 psi
 Density of Water : 8.3373 lb/gallon at 60 deg F

BUS NUMBER: 1607
 TEST DATE : 07/08/16

CYCLE	TOTAL FUEL USED(GAL)	TOTAL MILES	FUEL ECONOMY MPG(Measured)	FUEL ECONOMY MPG (Corrected)

Run #1, CCW				
CBD	.565	5.73	10.142	10.65
ART	.364	3.82	10.495	11.02
COM	.194	3.82	19.691	20.67
TOTAL	1.123	13.37	11.906	12.50

Run #2, CW				
CBD	.554	5.73	10.343	10.86
ART	.362	3.82	10.552	11.08
COM	.184	3.82	20.761	21.80
TOTAL	1.100	13.37	12.155	12.76

Run #3, CCW				
CBD	.577	5.73	9.931	10.43
ART	.356	3.82	10.730	11.27
COM	.191	3.82	20.000	21.00
TOTAL	1.124	13.37	11.895	12.49

Run #4, CW				
CBD	.587	5.73	9.761	10.25
ART	.373	3.82	10.241	10.75
COM	.211	3.82	18.104	19.01
TOTAL	1.171	13.37	11.418	11.99

IDLE CONSUMPTION (MEASURED)

First 20 Minutes Data: .15GAL Last 20 Minutes Data: .15GAL
 Average Idle Consumption: .46GAL/Hr

RUN CONSISTENCY: % Difference from overall average of total fuel used

Run 1: .6 Run 2: 2.6 Run 3: .5 Run 4: -3.7

SUMMARY (CORRECTED VALUES)

Average Idle Consumption : .44 G/Hr
 Average CBD Phase Consumption : 10.54 MPG
 Average Arterial Phase Consumption: 11.03 MPG
 Average Commuter Phase Consumption: 20.62 MPG
 Overall Average Fuel Consumption : 12.43 MPG
 Overall Average Fuel Consumption :104.66 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 45.8 dB(A); ranging from 44.0 dB(A) at the driver's seat to 46.7 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 67.4 dB(A) at the rear passenger seats to 73.2 dB(A) at the front passenger seats. The overall average was 70.5 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. A loud "whirring" noise coming from the bottom of the door at highway speeds. Pushing on the door and bottom gasket caused noise to lessen greatly. No other vibrations or rattles were noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 1: 80 dB(A) Stationary White Noise

Page 1 of 3

Bus Number: 1607	Date: 7-26-16
Personnel: S.R., T.S. & E.D.	
Temperature (°F): 76	Humidity (%): 77
Wind Speed (mph): 6	Wind Direction: W
Barometric Pressure (in.Hg): 30.10	
Initial Sound Level Meter Calibration: 93.7 dB(A)	
Interior Ambient Noise Level dB(A): < 30.0	Exterior Ambient Noise Level dB(A): 35.9
Microphone Height During Testing (in): 46.5	
Initial Reading at Bus: 80.1 dB(A)	Final Reading at Bus: 80.3dB(A)

Reading Location	Measured Sound Level dB(A)
Driver's Seat	44.0
Front Passenger Seats	45.4
In Line with Front Speaker	45.4
In Line with Middle Speaker	46.6
In Line with Rear Speaker	46.7
Rear Passenger Seats	46.5

Final Sound Level Meter Calibration: 93.7 dB(A)

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test
Page 2 of 3

Bus Number: 1607	Date: 5-3-16
Personnel: T.S. & S.R.	
Temperature (°F): 53	Humidity (%): 86
Wind Speed (mph): 4	Wind Direction: NE
Barometric Pressure (in.Hg): 29.90	
Initial Sound Level Meter Calibration: 93.8 dB(A)	
Interior Ambient Noise Level dB(A): < 30.0	Exterior Ambient Noise Level dB(A): 41.9
Microphone Height During Testing (in): 54.75	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	70.6
Front Passenger Seats	73.2
Middle Passenger Seats	70.9
Rear Passenger Seats	67.4

Final Sound Level Meter Calibration: 93.8 dB(A)

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test
Page 3 of 3

Bus Number: 1607	Date: 5-3-16
Personnel: T.S. & S.R.	
Temperature (°F): 54	

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 noted.	None noted.
Windows and Doors	Passenger doors	Road noise.
Seats and Wheel Chair lifts	None noted.	None noted.
Other	None noted.	None noted.

Comment on any other vibration or noise source which may have occurred
that is not described above: A loud "whirring" noise coming from the bottom of the
door at highway speeds. Pushing on the door and bottom gasket caused noise to
lessen greatly.
Comments: Adjustment of the lower door gasket may eliminate the noise.

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 38.8 dB(A), the average test result obtained while accelerating from a constant speed was 66.0 dB(A) on the right side and 65.2 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 42.9 dB(A), the average of the results obtained were 67.5 dB(A) on the right side and 69.8 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 41.6 dB(A) at low idle and 64.1 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 0.1 dB(A) lower at low idle and 0.3 dB(A) higher at wide open throttle. The exterior ambient noise level measured during this test was 39.4 dB(A). Note; this test vehicle is not equipped with a high idle mode.

EXTERIOR NOISE TEST DATA FORM

Accelerating from Constant Speed

Page 1 of 3

Bus Number: 1607		Date: 5-3-16	
Personnel: T.S. & S.R.			
Temperature (°F): 51		Humidity (%): 93	
Wind Speed (mph): 3		Wind Direction: N	
Barometric Pressure (in.Hg): 29.90			
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: 93.8 dB(A)			
Exterior Ambient Noise Level: 38.8 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	66.3	1	64.4
2	64.4	2	63.8
3	63.9	3	64.4
4	65.6	4	63.3
5	64.2	5	65.9
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 = 66.0 dB(A)		Average of two highest actual noise levels = 65.2 dB(A)	
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM

Accelerating from Standstill

Page 2 of 3

Bus Number: 1607		Date: 5-3-16	
Personnel: T.S. & S.R.			
Temperature (°F): 52		Humidity (%): 93	
Wind Speed (mph): 3		Wind Direction: ENE	
Barometric Pressure (in.Hg): 29.90			
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: 93.8 dB(A)			
Exterior Ambient Noise Level: 42.9 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	66.2	1	68.5
2	66.4	2	69.9
3	66.4	3	68.6
4	66.7	4	69.6
5	68.2	5	69.7
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 = 67.5 dB(A)		Average of two highest actual noise levels = 69.8 dB(A)	
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM

Stationary

Page 3 of 3

Bus Number: 1607		Date: 5-3-16	
Personnel: T.S. & S.R.			
Temperature (°F): 53		Humidity (%): 93	
Wind Speed (mph): 4		Wind Direction: ENE	
Barometric Pressure (in.Hg): 29.90			
Initial Sound Level Meter Calibration: 93.8 dB(A)			
Exterior Ambient Noise Level: 39.4 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	750	41.7	41.4
High Idle	N/A	N/A	N/A
Wide Open Throttle	3,000	64.6	63.6
Accessories and Air Conditioning OFF			
Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side dB(A)
		Measured	Measured
Low Idle	750	41.2	41.7
High Idle	N/A	N/A	N/A
Wide Open Throttle	3,000	65.0	63.8
Final Sound Level Meter Calibration Check: 93.8 dB(A)			
Comments: This test vehicle is not equipped with a high idle mode.			

7.2 EXTERIOR NOISE TESTS



TEST BUS UNDERGOING EXTERIOR NOISE TESTING





Creative Bus Sales

October 12, 2022

To Whom It May Concern:

Creative Bus Sales, Inc. located at 9225 Priority Way, Suite 300, 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



Creative Bus Sales

THE NATION'S LARGEST BUS DEALER SINCE 1980

Experience and Qualifications

Responder Information

Creative Bus Sales, Inc.
11601 Cyrus Way, Suite 101
Mukilteo, WA 98275

Derek Wyman | VP of Public Sector Sales
Phone: 800.326.2877
Email: DerekW@CreativeBusSales.com

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 has a dedicated customer service department to manage 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

THE NATION'S LARGEST BUS DEALER SINCE 1980

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 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.

The 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. A 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 warranties and service as



Creative Bus Sales

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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 downtime and a better overall experience for 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. A complete description of the 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 building 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

Contract Management Team

- Tony Matijevich | President
- TJ Matijevich | Vice President Sales
- JR Sauder | Senior Vice President
- Derek Wyman | VP of Public Sector Sales
- Paul Watson | Sales Executive, Project Manager
- Nick Corley | Sales Operations Manager
- Carl Henderson | Senior Director of Service
- Jamie Greenlaw | Fleet Warranty Administrator



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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

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



Creative Bus Sales

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21. Orlando, FL
22. Charlotte, NC

23. College Park, GA

Notices should be sent c/o

Derek Wyman Creative Bus Sales, Inc. 11601 Cyrus Way, Suite 101, Mukilteo, WA 98275
Phone: 800.326.2877 Email: DerekW@CreativeBusSales.com

Preparer

Nick Corley, Sales Operations Manager for Creative Bus Sales, is the preparer of this proposal.

Flexible Scope

Creative Bus Sales is committed to flexibility in the products and services offered in the contract upon request by the State.

Independent Pricing

Creative Bus Sales certifies that in connection with this Contract the prices proposed have been arrived at without consultation, communication, or agreement for the purpose of restricting competition.

Signer(s)

Each person signing this proposal and/or addenda is the person responsible for or authorized to make decisions as to the prices quoted in the cost proposal and has not participated and will not participate in any action contrary to those stated above.

Consent

If awarded a contract, Creative Bus Sales will not assign any part of its interest to the agreement without prior consent of the State.

Acceptance of Terms

Creative Bus Sales accepts the Contract Terms and Conditions.

Cutoff Dates

Creative Bus Sales agrees to comply with this section. Model year cutoffs are well communicated by the OEM's and chassis dealers alike. We generally receive 60 – 90 day notice and will notify the agency promptly.

Sincerely,

Nick Corley | Sales Operations Manager

Creative Bus Sales, Inc.



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

References

City of Cheyenne
Rena Jording
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WY- DOT
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Transit Program Specialist
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Kitsap Transit
Dennis Griffey
Vehicle & Facilities Maintenance Director
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Denver – RTD
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Arizona Department of Transportation
Mike Normand
Director of Transit Programs
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mnormand@azdot.gov
206 S. 17th Street
Phoenix, AZ 85007



Ford Motor Company

Product Development Center
20901 Oakwood Boulevard
Dearborn, MI 48124

April 6, 2022

Lenny Cudnik
MobilityTRANS
12633 Inkster Rd, Livonia 48150

To Interested Personnel,

MobilityTRANS is a current Ford QVM Program participant and has achieved a Fully Meets rating for 2022. QVM Program rating forms are proprietary between Ford and modifier. Ratings are not allowed to be shared.

Questions to me info@aj-engineering.com or call my cell 248-790-6838.

Respectfully,

Alex Jowa
Qualified Vehicle Modifier Program Coordinator



Creative Bus Sales

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FTA Compliant Base Vehicle Clarification (Buy America)

Please note that in order to be compliant in the FTA Vehicle categories as it relates to meeting Buy America requirements, Creative has provided pricing on base vehicles, with seats - above and beyond minimum specifications, that meet the domestic content threshold for Buy America on the Braun products.

Per the terms of the solicitation and to ensure an even playing field, we respectfully request DES ensures all bidders' base vehicle pricing, in the FTA compliant categories, meet Buy America as base vehicles bid and without extra optional content additions.



Contract:	Washington State
Agency:	
VIN:	0
Date:	8/31/2023

BUY AMERICA DOMESTIC Certification Statement
Certificate Of Compliance With Section 165(b)(3)

MobilityTRANS hereby 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

<u>Component/Manufacturer</u>		Manufacturing Location	Domestic Content %
Chassis	Ford Motor Company	U.S.	89.79%
75.93% U.S. Content			
Wheelchair Lift	Braun Ability	U.S.	5.85%
73% U.S. Content			
Wheelchair Tiedowns	Q'Straint	U.S.	1.79%
Greater Than 70%			
Vehicle Interface Module	LGS Group, Inc	U.S.	0.27%
100% U.S. Content			
Misc		Unaccounted	0.00%
Domestic Content Not Evaluated			
		Net Domestic Content %	97.71%

President,
MobilityTRANS

Pre-Award Buy America Certification

Manufacturer: The Braun Corporation
Bid No. 07621
Description: Wheelchair Accesible Vehicle
End User: State of Washington
VIN / Job: BA3021073
Final assembly activities completed at: The Braun Corporation
 631 W 11th St. Winamac, IN 46996

Component	Manufacturer	Country of Origin	C % of Total Cost
OEM Chassis	FCA Canada	Windsor, Ontario, Canada	39.872%
Weldment	The Braun Corporation	Winamac, IN, United States	9.464%
Restraint Systems & Belts	QStraint USA	Atlanta, GA, United States	6.007%
Sub Assembly	The Braun Corporation	Winamac, IN, United States	3.703%
Exhaust System & Components	The Braun Corporation	Winamac, IN, United States	2.994%
Seats - Seating & Fabric	The Braun Corporation	Winamac, IN, United States	2.064%
ADA & Special Equip.	Owens Products	Sturgis, MI, United States	1.590%
Wire / Harness / Loom	The Braun Corporation	Winamac, IN, United States	0.747%
Fuel system & Undercarriage	Formfab LLC	Rochester Hills, MI, United States	0.460%
Plastic - Vacform & Inj.	The Braun Corporation	Winamac, IN, United States	0.356%
ADA & Special Equip.	Braun Chrysler,Dodge,Jeep, Inc	Winamac, IN, United States	0.309%
Metal Fabrication	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.266%
Floor - Substrate & Covering	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.225%
Metal Fabrication	The Braun Corporation	Winamac, IN, United States	0.210%
ADA & Special Equip.	Logistics Supply	Charlotte, NC, United States	0.199%
Metal Fabrication	MORryde International, Inc.	Elkhart, IN, United States	0.198%
Heat, Ventilation, Air Cond.	Curtis Products, Inc	South Bend, IN, United States	0.163%
Floor - Substrate & Covering	WeatherTech Direct LLC	Carol Stream, IL, United States	0.158%
ADA & Special Equip.	Standard Industrial Supply	Winamac, IN, United States	0.155%
Plastic - Vacform & Inj.	The Joslyn Manufacturing Co., Inc.	Macedonia, OH, United States	0.114%
Brake System	Formfab LLC	Rochester Hills, MI, United States	0.105%
Metal Machined Parts	Cutting Edge Machine & Tool	New Paris, IN, United States	0.097%
ADA & Special Equip.	Buckeye Fire Equipment	Kings Mountain, NC, United States	0.097%
Sub Assembly	Proto Shapes, Inc.	Coldwater, MI, United States	0.092%
Metal Machined Parts	Kilgore Manufacturing Co. Inc.	Columbia City, IN, United States	0.072%
Plastic - Vacform & Inj.	Proto Shapes, Inc.	Coldwater, MI, United States	0.067%
Metal Machined Parts	The Braun Corporation	Winamac, IN, United States	0.057%
OEM - Parts	The Braun Corporation	Winamac, IN, United States	0.046%
Media / Decals / Literature	Sharpline Converting Inc.	Wichita, KS, United States	0.044%
Hardware - Nuts Bolts & Screws	Mcmaster-Carr Supply Co.	Chicago, IL, United States	0.043%
ADA & Special Equip.	James King & Co.	Tualatine, OR, United States	0.030%
ADA & Special Equip.	Certified Safety Manufacturing,Inc.	Dallas, TX, United States	0.026%
Plastic - Vacform & Inj.	Konrady Plastics, Inc.	Portage, IN, United States	0.021%
Fuel system & Undercarriage	Industrial Fabrication	Bridgman, MI, United States	0.020%
Plastic - Vacform & Inj.	Lippert Components Inc	Chicago, IL, United States	0.020%

Metal Fabrication	Industrial Fabrication	Bridgman, MI, United States	0.019%
Option-Vehicle	The Braun Corporation	Winamac, IN, United States	0.017%
Electronics / Switches & Senso	Vista Manufacturing Inc	Elkhart, IN, United States	0.011%
Metal Fabrication	LSI Metal Fabrication	Logansport, IN, United States	0.011%
Metal Fabrication	Cutting Edge Machine & Tool	New Paris, IN, United States	0.010%
Hydraulics / Hoses / Fittings	The Braun Corporation	Winamac, IN, United States	0.010%
Wire / Harness / Loom	Altex	Westfield, IN, United States	0.009%
Media / Decals / Literature	Mandala Screen Printing	Winamac, IN, United States	0.006%
Metal Fabrication	Quality Tool And Stamping, Inc.	Muskegon Heights, MI, United States	0.005%
Hardware - Nuts Bolts & Screws	The Braun Corporation	Winamac, IN, United States	0.003%
Hardware - Nuts Bolts & Screws	Umpco, Inc.	Garden Grove, CA, United States	0.003%
Media / Decals / Literature	Webb Printing	Winamac, IN, United States	0.003%
Media / Decals / Literature	Dec-O-Art, Inc.	Elkhart, IN, United States	0.002%
Hardware - Nuts Bolts & Screws	EFC International	Chicago, IL, United States	0.002%
Restraint Systems & Belts	Kilgore Manufacturing Co. Inc.	Columbia City, IN, United States	0.001%
Electronics / Switches & Senso	ELECTRO-TERM INC./HOLLINGSWORTH	Springfield, MA, United States	0.000%
NVH	GDC, Inc	Goshen, IN, United States	0.000%
Electronics / Switches & Senso	Accele Electronics	Santa Fe Springs, CA, United States	0.000%
Raw Material	The Braun Corporation	Winamac, IN, United States	0.000%
Grand Total			70.198%

Cost of final assembly as related to
cost of vehicle (percentage): 5.19%

Description of final assembly activities
detailed on next page.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Description of final assembly activities:

1. Braun's Final Assembly manufacturing processes consist of the following:

- (a) "Seat Installation": Installation of seats in the first, second, and third seating rows in the vehicle.
- (b) "Subsystem Installation": Installation of new lines for rear brake, fuel, heat, and air conditioning components.
- (c) "Fuel Tank System Installation": Installed the fuel tank. Installation and interconnection of the new fuel fill pipe assembly to meet the relocated and rotated OEM fuel tank.
- (d) "Exhaust Installation & Interconnection": Installing a new exhaust pipe, hanger brackets, and the OEM muffler.
- (e) "Engine/Transmission/Front Suspension Assembly Modifications": Disconnecting the engine, transmission, and front suspension assembly in order to raise the body to accommodate the lowered floor. Modifications are made to the engine, transmission, and front suspension assembly, involve adding various types of spacing brackets, custom steering shaft extension, and two engine cradle safety bracket tube extensions, and reconnecting the engine, transmission, and front suspension assembly.
- (f) "Slide Door Installation": Doors are installed and tested to verify proper travel and function.
- (g) "Rear Axle & Suspension Installation & Interconnection": Installation of the rear axle, addition of brake line extensions, and rear brake lines fastened.
- (h) "Flooring & Walls Installation": Installation of flooring substrate and covering and carpet or plastic panels with carpeted inserts. Walls are covered with new interior panels and trims.
- (i) "Rear Bumper Installation": Installation of the reinforced rear bumper.
- (j) "Wiring Installation": Installation of new and reroute existing wiring to accommodate the new seating systems, airbag systems, wheelchair ramp system, slide door operation, and other accessibility modifications such as kneeling function.
- (k) "Ramp Installation & Interconnection": Installation and interconnection of the wheelchair ramp.
- (l) "Undercoating": Newly installed components are coated, and the entire floor is undercoated.
- (m) "Inspection & Certification": The vehicle is inspected, weighed, road tested, identified repairs completed if required, and recertified to all applicable FMVSS by Braun in preparation of the vehicles for delivery.



PRE-AWARD FMVSS COMPLIANCE CERTIFICATION

As required by 49 CFR part 663 - Subpart D, State of Washington (the recipient) certifies that it received, at the pre-award stage, a copy of The Braun Corporation's (the manufacturer) self-certification information stating that the vehicles, ADA Lowered-Floor Minivan Rear-Entry Fold-Out Ramp , will comply with the relevant Federal Motor Vehicle Safety Standard issued by the National Highway Traffic Safety Administration in 49 CFR part 571.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager



TIRE AND LOADING INFORMATION

SEATING CAPACITY	TOTAL	FRONT	REAR

The combined weight of occupants and cargo should never exceed Kg or Lbs.

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT			
REAR			
SPARE			

FD-327

THE BRAUN CORPORATION
631 w. 11th Street, Winamac, Indiana 46996

This Vehicle was altered by THE BRAUN CORPORATION in
/ and as altered it conforms to all applicable
Federal Motor Vehicle Safety Bumper and Theft Prevention Standards
affected by the alteration and in effect in /

Vehicle Type: MVP
Vin #:

Available Payload Capacity: LBS(Without Passengers & Wheelchairs)

MANUFACTURED BY:
THE BRAUN CORPORATION ENTERTAIN.COM®
DATE OF MANUFACTURE MO. YR.

INCOMPLETE VEHICLE MANUFACTURED BY:
CHRYSLER CORPORATION
DATE INC. VEH. MFD. MO. YR.

GVWR(KG) LBS.
GAWR FRONT(KG) LBS.
WITH TIRES
_____ RIMS, @ _____ PSI COLD
 (kPa cold)

GAWR REAR(KG) LBS.
WITH TIRES
_____ RIMS, @ _____ PSI COLD
 (kPa cold)

"THIS VEHICLE HAS BEEN COMPLETED
IN ACCORDANCE WITH THE PRIOR
MANUFACTURERS' IVD, WHERE APPLICABLE.
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY STANDARDS,
[AND BUMPER AND THEFT PREVENTION
STANDARDS, IF APPLICABLE]
IN EFFECT IN (/)."
 (MONTH / YEAR)

VEHICLE IDENTIFICATION NO:

VEHICLE TYPE: MPV

Pre-Award Buy America

PURCHASER'S REQUIREMENTS CERTIFICATION

Purchaser - FTA Grantee	State of Washington
Quantity	1
Description of Vehicles	ADA Lowered-Floor Minivan Rear-Entry Fold-Out Ramp
Bid / RFP Contract Number	07621

As required by Title 49 of the CFR, Part 663 - Subpart B, **BraunAbility | The Braun Corporation of Winamac, Indiana** (the manufacturer) certifies that the documentation submitted in response to **State of Washington** (the recipient) rolling stock procurement solicitation meets the required Bid Specification Compliance with the Purchaser's Solicitation Specifications.

The manufacturer certifies that the rolling stock vehicles to be manufactured for the recipient are the same product described in the recipient's solicitation specification and the manufacturer is a responsible manufacturer with the capability to produce a rolling stock vehicle that meets the recipient's specifications set forth in the recipient's solicitation.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Pre-Award Buy America Certification

Manufacturer: The Braun Corporation
Bid No. 07621
Description: Wheelchair Accesible Vehicle
End User: State of Washington
VIN / Job: BA3021066
Final assembly activities completed at: **The Braun Corporation**
631 W 11th St. Winamac, IN 46996

Component	Manufacturer	Country of Origin	C % of Total Cost
OEM Chassis	FCA Canada	Windsor, Ontario, Canada	38.826%
Weldment	The Braun Corporation	Winamac, IN, United States	11.534%
Sub Assembly	The Braun Corporation	Winamac, IN, United States	5.479%
Ramp Parts & Assemblies	The Braun Corporation	Winamac, IN, United States	2.408%
Seats - Seating & Fabric	The Braun Corporation	Winamac, IN, United States	1.936%
Plastic - Vacform & Inj.	The Braun Corporation	Winamac, IN, United States	1.478%
Wire / Harness / Loom	Altex	Westfield, IN, United States	1.070%
Floor - Substrate & Covering	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.883%
ADA & Special Equip.	The Braun Corporation	Winamac, IN, United States	0.839%
Metal Fabrication	MORryde International, Inc.	Elkhart, IN, United States	0.466%
Plastic - Vacform & Inj.	Lippert Components Inc	Chicago, IL, United States	0.463%
Weldment	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.427%
Substantial Transformation	The Braun Corporation	Winamac, IN, United States	0.398%
Plastic - Vacform & Inj.	Patrick Industries Inc	Elkart, IN, United States	0.330%
Heat, Ventilation, Air Cond.	Formfab LLC	Rochester Hills, MI, United States	0.312%
ADA & Special Equip.	Braun Chrysler,Dodge,Jeep, Inc	Winamac, IN, United States	0.301%
Wire / Harness / Loom	The Braun Corporation	Winamac, IN, United States	0.288%
Substantial Transformation Gross	The Braun Corporation	Winamac, IN, United States	0.284%
Electronics / Switches & Senso	FEV North America Inc.	Auburn Hills, MI, United States	0.263%
Metal Fabrication	The Braun Corporation	Winamac, IN, United States	0.252%
Metal Fabrication	LSI Metal Fabrication	Logansport, IN, United States	0.249%
Option-Vehicle	The Braun Corporation	Winamac, IN, United States	0.226%
Fuel system & Undercarriage	Formfab LLC	Rochester Hills, MI, United States	0.198%
Metal Fabrication	Cutting Edge Machine & Tool	New Paris, IN, United States	0.189%
Restraint Systems & Belts	The Braun Corporation	Winamac, IN, United States	0.154%
Fuel system & Undercarriage	Elastomeros Tecnicos Moldeados, Inc	Madison Heights, MI, United States	0.134%
Metal Fabrication	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.090%
Brake System	Formfab LLC	Rochester Hills, MI, United States	0.071%
Metal Machined Parts	Cutting Edge Machine & Tool	New Paris, IN, United States	0.060%
Fuel system & Undercarriage	Cooper-Standard Automotive Fhs, Inc.	Chicago, IL, United States	0.053%
Metal Fabrication	MJ Celco, Inc.	Schiller Park, IL, United States	0.052%
Metal Fabrication	Quality Tool And Stamping, Inc.	Muskegon Heights, MI, United States	0.046%
Plastic - Vacform & Inj.	SPI Blow Molding LLC	Coloma, MI, United States	0.046%
Media / Decals / Literature	Sharpline Converting Inc.	Wichita, KS, United States	0.043%
Vehicle Section - Qty Bearing	The Braun Corporation	Winamac, IN, United States	0.041%

Heat, Ventilation, Air Cond.	HS Automotive USA LLC	Enterprise, AL, United States	0.041%
Exhaust System & Components	Exhaust Productions Inc.	Merrillville, IN, United States	0.040%
Sub Assembly	Vista Manufacturing Inc	Elkhart, IN, United States	0.035%
Metal Machined Parts	The Braun Corporation	Winamac, IN, United States	0.035%
Plastic - Vacform & Inj.	Proto Shapes, Inc.	Coldwater, MI, United States	0.035%
ADA & Special Equip.	Cooper-Standard Automotive Fhs, Inc.	Chicago, IL, United States	0.031%
Media / Decals / Literature	Webb Printing	Winamac, IN, United States	0.023%
Wire / Harness / Loom	Atronix, Inc.	Tucson, AZ, United States	0.018%
Media / Decals / Literature	Mandala Screen Printing	Winamac, IN, United States	0.017%
Metal Machined Parts	Kilgore Manufacturing Co. Inc.	Columbia City, IN, United States	0.017%
Plastic - Vacform & Inj.	Thunderbird Molding Shelbyville	Carol Stream, IL, United States	0.013%
Electronics / Switches & Senso	Vista Manufacturing Inc	Elkhart, IN, United States	0.011%
Metal Machined Parts	MJ Celco, Inc.	Schiller Park, IL, United States	0.009%
Wire / Harness / Loom	Cable Assembly, LLC	Charlotte, NC, United States	0.009%
NVH	GDC, Inc	Goshen, IN, United States	0.008%
Wire / Harness / Loom	Vista Manufacturing Inc	Elkhart, IN, United States	0.008%
Exhaust System & Components	Standard Industrial Supply	Winamac, IN, United States	0.007%
Hardware - Nuts Bolts & Screws	Umpco, Inc.	Garden Grove, CA, United States	0.004%
Hydraulics / Hoses / Fittings	Cooper-Standard Automotive Fhs, Inc.	Chicago, IL, United States	0.003%
Heat, Ventilation, Air Cond.	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.003%
Media / Decals / Literature	Dec-O-Art, Inc.	Elkhart, IN, United States	0.002%
Heat, Ventilation, Air Cond.	Cooper-Standard Automotive Fhs, Inc.	Chicago, IL, United States	0.002%
Fuel system & Undercarriage	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.002%
Hardware - Nuts Bolts & Screws	The Braun Corporation	Winamac, IN, United States	0.002%
Electronics / Switches & Senso	Umpco, Inc.	Garden Grove, CA, United States	0.001%
Media / Decals / Literature	DuraMark Technologies Inc.	Westfield, IN, United States	0.001%
Hardware - Nuts Bolts & Screws	EFC International	Chicago, IL, United States	0.001%
NVH	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.001%
Brake System	The Braun Corporation	Winamac, IN, United States	0.001%
Media / Decals / Literature	The Braun Corporation	Winamac, IN, United States	0.001%
Fuel system & Undercarriage	dlhBowles Inc.	Canton, OH, United States	0.001%
Hardware - Nuts Bolts & Screws	Caplugs	Carol Stream, IL, United States	0.001%
Grand Total			70.268%

Cost of final assembly as related to
cost of vehicle (percentage): 7.62%

Description of final assembly activities
detailed on next page.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Description of final assembly activities:

1. Braun's Final Assembly manufacturing processes consist of the following:

- (a) "Seat Installation": Installation of seats in the first, second, and third seating rows in the vehicle.
- (b) "Subsystem Installation": Installation of new lines for rear brake, fuel, heat, and air conditioning components.
- (c) "Fuel Tank System Installation": Installed the fuel tank. Installation and interconnection of the new fuel fill pipe assembly to meet the relocated and rotated OEM fuel tank.
- (d) "Exhaust Installation & Interconnection": Installing a new exhaust pipe, hanger brackets, and the OEM muffler.
- (e) "Engine/Transmission/Front Suspension Assembly Modifications": Disconnecting the engine, transmission, and front suspension assembly in order to raise the body to accommodate the lowered floor. Modifications are made to the engine, transmission, and front suspension assembly, involve adding various types of spacing brackets, custom steering shaft extension, and two engine cradle safety bracket tube extensions, and reconnecting the engine, transmission, and front suspension assembly.
- (f) "Slide Door Installation": Doors are installed and tested to verify proper travel and function.
- (g) "Rear Axle & Suspension Installation & Interconnection": Installation of the rear axle, addition of brake line extensions, and rear brake lines fastened.
- (h) "Flooring & Walls Installation": Installation of flooring substrate and covering and carpet or plastic panels with carpeted inserts. Walls are covered with new interior panels and trims.
- (i) "Rear Bumper Installation": Installation of the reinforced rear bumper.
- (j) "Wiring Installation": Installation of new and reroute existing wiring to accommodate the new seating systems, airbag systems, wheelchair ramp system, slide door operation, and other accessibility modifications such as kneeling function.
- (k) "Ramp Installation & Interconnection": Installation and interconnection of the wheelchair ramp.
- (l) "Undercoating": Newly installed components are coated, and the entire floor is undercoated.
- (m) "Inspection & Certification": The vehicle is inspected, weighed, road tested, identified repairs completed if required, and recertified to all applicable FMVSS by Braun in preparation of the vehicles for delivery.

PRE-AWARD FMVSS COMPLIANCE CERTIFICATION

As required by 49 CFR part 663 - Subpart D, State of Washington (the recipient) certifies that it received, at the pre-award stage, a copy of The Braun Corporation's (the manufacturer) self-certification information stating that the vehicles, ADA Lowered-Floor Minivan Side-Entry Fold-Out Ramp, will comply with the relevant Federal Motor Vehicle Safety Standard issued by the National Highway Traffic Safety Administration in 49 CFR part 571.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

TIRE AND LOADING INFORMATION			
SEATING CAPACITY	TOTAL	FRONT	REAR
The combined weight of occupants and cargo should never exceed _____ Kg or _____ Lbs.			
TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION FD-327
FRONT			
REAR			
SPARE			

THE BRAUN CORPORATION	
631 w. 11th Street, Winamac, Indiana 46996	
This Vehicle was altered by THE BRAUN CORPORATION in / and as altered it conforms to all applicable Federal Motor Vehicle Safety Bumper and Theft Prevention Standards affected by the alteration and in effect in /	
Vehicle Type: MVP Vin #:	
Available Payload Capacity:	LBS(Without Passengers & Wheelchairs)

MANUFACTURED BY: THE BRAUN CORPORATION ENTERVAN.COM®	
DATE OF MANUFACTURE	MO. YR.
INCOMPLETE VEHICLE MANUFACTURED BY: CHRYSLER CORPORATION	
DATE INC. VEH. MFD.	MO. YR.
GVWR(_____ KG) _____ LBS.	
GAWR FRONT(_____ KG) _____ LBS.	
WITH _____ TIRES	
_____ RIMS, @ _____ PSI COLD (_____ kPa cold)	
GAWR REAR(_____ KG) _____ LBS.	
WITH _____ TIRES	
_____ RIMS, @ _____ PSI COLD (_____ kPa cold)	
"THIS VEHICLE HAS BEEN COMPLETED IN ACCORDANCE WITH THE PRIOR MANUFACTURERS' IVD, WHERE APPLICABLE. THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS, [AND BUMPER AND THEFT PREVENTION STANDARDS, IF APPLICABLE] IN EFFECT IN (/)." (MONTH / YEAR)	
VEHICLE IDENTIFICATION NO:	
VEHICLE TYPE: MPV	

Pre-Award Buy America**PURCHASER'S REQUIREMENTS CERTIFICATION**

Purchaser - FTA Grantee	State of Washington
Quantity	1
Description of Vehicles	ADA Lowered-Floor Minivan Side-Entry Fold-Out Ramp
Bid / RFP Contract Number	07621

As required by Title 49 of the CFR, Part 663 - Subpart B, **BraunAbility | The Braun Corporation of Winamac, Indiana** (the manufacturer) certifies that the documentation submitted in response to **State of Washington** (the recipient) rolling stock procurement solicitation meets the required Bid Specification Compliance with the Purchaser's Solicitation Specifications.

The manufacturer certifies that the rolling stock vehicles to be manufactured for the recipient are the same product described in the recipient's solicitation specification and the manufacturer is a responsible manufacturer with the capability to produce a rolling stock vehicle that meets the recipient's specifications set forth in the recipient's solicitation.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Pre-Award Buy America Certification

Manufacturer: The Braun Corporation
Bid No. 2942103
Description: Wheelchair Accessible Vehicle
End User: State of WA 8/2 w/ 19" Seats
VIN / Job: 2942103
Final assembly activities completed at: The Braun Corporation
 631 W 11th St. Winamac, IN 46996

Component	Manufacturer	Country of Origin	C % of Total Cost
Restraint Systems & Belts	QStraint USA	Atlanta, GA, United States	21.617%
OEM Chassis			11.678%
Seats - Seating & Fabric	Freedman Seating Company	Bedford Park, IL, United States	8.944%
Heat, Ventilation, Air Cond.	TransAir	Dallastown, PA, United States	6.158%
Substantial Transformation	The Braun Corporation	Tyler, TX, United States	4.795%
Metal Fabrication	Regal Machine, Mfg.	Winona, TX, United States	4.419%
Floor - Substrate & Covering	QStraint USA	Atlanta, GA, United States	4.185%
Substantial Transformation Gross	The Braun Corporation	Tyler, TX, United States	3.418%
Plastic - Vacform & Inj.	Patrick Industries Inc	Elkart, IN, United States	2.616%
Ramp Parts & Assemblies	The Braun Corporation	Tyler, TX, United States	0.901%
Sub Assembly	QStraint USA	Atlanta, GA, United States	0.803%
Sub Assembly	A & M Systems	Elkhart, IN, United States	0.712%
Motor / Actuator / Gas spring	A & M Systems	Elkhart, IN, United States	0.705%
Consumables & Tooling	Fastenal Company	Winona, MN, United States	0.563%
Floor - Substrate & Covering	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.471%
Exhaust System & Components	Jones Muffler Shop	Ben Wheeler, TX, United States	0.339%
Wire / Harness / Loom	LGS Group Inc	Reno, NV, United States	0.304%
Electronics / Switches & Senso	LGS Group Inc	Reno, NV, United States	0.289%
ADA & Special Equip.	Fastenal Company	Winona, MN, United States	0.260%
Wire / Harness / Loom	Vista Manufacturing Inc	Elkhart, IN, United States	0.188%
Weldment	Regal Machine, Mfg.	Winona, TX, United States	0.169%
Plastic - Vacform & Inj.	Polymershapes LLC	St. Louis, MO, United States	0.163%
Consumables & Tooling	QStraint USA	Atlanta, GA, United States	0.113%
Electronics / Switches & Senso	Patrick Industries, Inc.	Minneapolis, IN, United States	0.105%
Media / Decals / Literature	Tyler Wrap Company, Inc.	Tyler, TX, United States	0.057%
Raw Material	Regal Machine, Mfg.	Winona, TX, United States	0.051%
Floor - Substrate & Covering	The Braun Corporation	Tyler, TX, United States	0.042%
Media / Decals / Literature	Sharpline Converting Inc.	Wichita, KS, United States	0.024%
Wire / Harness / Loom	Digi-Key Corporation 113	Thief River Falls, MN, United States	0.024%
Metal Fabrication	CNC Fabrications LLC	Tyler, TX, United States	0.023%
Electronics / Switches & Senso	Navico Group Americas LLC	Chicago, IL, United States	0.010%
Wire / Harness / Loom	Navico Group Americas LLC	Chicago, IL, United States	0.004%
Electronics / Switches & Senso	Fastenal Company	Winona, MN, United States	0.003%
Metal Fabrication	MORryde International, Inc.	Elkhart, IN, United States	0.003%
Hardware - Nuts Bolts & Screws	Fastenal Company	Winona, MN, United States	0.001%



Media / Decals / Literature	The Braun Corporation	Tyler, TX, United States	0.001%
Grand Total			74.156%

Cost of final assembly as related to
cost of vehicle (percentage): 4.98%

Description of final assembly activities
detailed on next page.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Description of final assembly activities:

1. Braun's Final Assembly manufacturing processes consist of the following:

- (a) "Seat Installation": Installation of seats in the first, second, and third seating rows in the vehicle.
- (b) "Subsystem Installation": Installation of new lines for rear brake, fuel, heat, and air conditioning components.
- (c) "Fuel Tank System Installation": Installed the fuel tank. Installation and interconnection of the new fuel fill pipe assembly to meet the relocated and rotated OEM fuel tank.
- (d) "Exhaust Installation & Interconnection": Installing a new exhaust pipe, hanger brackets, and the OEM muffler.
- (e) "Engine/Transmission/Front Suspension Assembly Modifications": Disconnecting the engine, transmission, and front suspension assembly in order to raise the body to accommodate the lowered floor. Modifications are made to the engine, transmission, and front suspension assembly, involve adding various types of spacing brackets, custom steering shaft extension, and two engine cradle safety bracket tube extensions, and reconnecting the engine, transmission, and front suspension assembly.
- (f) "Slide Door Installation": Doors are installed and tested to verify proper travel and function.
- (g) "Rear Axle & Suspension Installation & Interconnection": Installation of the rear axle, addition of brake line extensions, and rear brake lines fastened.
- (h) "Flooring & Walls Installation": Installation of flooring substrate and covering and carpet or plastic panels with carpeted inserts. Walls are covered with new interior panels and trims.
- (i) "Rear Bumper Installation": Installation of the reinforced rear bumper.
- (j) "Wiring Installation": Installation of new and reroute existing wiring to accommodate the new seating systems, airbag systems, wheelchair ramp system, slide door operation, and other accessibility modifications such as kneeling function.
- (k) "Ramp Installation & Interconnection": Installation and interconnection of the wheelchair ramp.
- (l) "Undercoating": Newly installed components are coated, and the entire floor is undercoated.
- (m) "Inspection & Certification": The vehicle is inspected, weighed, road tested, identified repairs completed if required, and recertified to all applicable FMVSS by Braun in preparation of the vehicles for delivery.

Pre-Award Buy America**PURCHASER'S REQUIREMENTS CERTIFICATION**

Purchaser - FTA Grantee	State of WA 8/2 w/ 19" Seats
Quantity	1
Description of Vehicles	Promaster CompanionVan Fold-Out Ramp
Bid / RFP Contract Number	2942103

As required by Title 49 of the CFR, Part 663 - Subpart B, **BraunAbility | The Braun Corporation of Winamac, Indiana** (the manufacturer) certifies that the documentation submitted in response to **State of WA 8/2 w/ 19" Seats** (the recipient) rolling stock procurement solicitation meets the required Bid Specification Compliance with the Purchaser's Solicitation Specifications.

The manufacturer certifies that the rolling stock vehicles to be manufactured for the recipient are the same product described in the recipient's solicitation specification and the manufacturer is a responsible manufacturer with the capability to produce a rolling stock vehicle that meets the recipient's specifications set forth in the recipient's solicitation.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Pre-Award Buy America Certification

Manufacturer: The Braun Corporation
Bid No. RFP# 23-T041
Description: Wheelchair Accessible Vehicle
End User: State of WA - 9/2-17" Seats, BA, Roof
VIN / Job: BA2884002
Final assembly activities completed at: The Braun Corporation
 631 W 11th St. Winamac, IN 46996

Component	Manufacturer	Country of Origin	C % of Total Cost
Restraint Systems & Belts	QStraint USA	Atlanta, GA, United States	21.544%
OEM Chassis			11.552%
Seats - Seating & Fabric	Freedman Seating Company	Bedford Park, IL, United States	9.021%
Heat, Ventilation, Air Cond.	TransAir	Dallastown, PA, United States	6.092%
Substantial Transformation	The Braun Corporation	Tyler, TX, United States	4.743%
Metal Fabrication	Regal Machine, Mfg.	Winona, TX, United States	4.394%
Floor - Substrate & Covering	QStraint USA	Atlanta, GA, United States	4.140%
Substantial Transformation Gross	The Braun Corporation	Tyler, TX, United States	3.381%
Plastic - Vacform & Inj.	Patrick Industries Inc	Elkart, IN, United States	2.588%
Ramp Parts & Assemblies	The Braun Corporation	Tyler, TX, United States	0.892%
Sub Assembly	QStraint USA	Atlanta, GA, United States	0.794%
Sub Assembly	A & M Systems	Elkhart, IN, United States	0.704%
Motor / Actuator / Gas spring	A & M Systems	Elkhart, IN, United States	0.697%
Consumables & Tooling	Fastenal Company	Winona, MN, United States	0.557%
Floor - Substrate & Covering	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.465%
Exhaust System & Components	Jones Muffler Shop	Ben Wheeler, TX, United States	0.335%
Wire / Harness / Loom	LGS Group Inc	Reno, NV, United States	0.301%
Electronics / Switches & Senso	LGS Group Inc	Reno, NV, United States	0.286%
ADA & Special Equip.	Fastenal Company	Winona, MN, United States	0.257%
Bar Stock / Tubing	Marson International LLC	Elkhart, IN, United States	0.216%
Hardware - Nuts Bolts & Screws	Marson International LLC	Elkhart, IN, United States	0.193%
Wire / Harness / Loom	Vista Manufacturing Inc	Elkhart, IN, United States	0.186%
Weldment	Regal Machine, Mfg.	Winona, TX, United States	0.168%
Plastic - Vacform & Inj.	Polymershapes LLC	St. Louis, MO, United States	0.161%
Electronics / Switches & Senso	Central Components Manufacturing LLC	Middlesex, NJ, United States	0.159%
Electronics / Switches & Senso	Navico Group Americas LLC	Chicago, IL, United States	0.114%
Consumables & Tooling	QStraint USA	Atlanta, GA, United States	0.112%
Electronics / Switches & Senso	Patrick Industries, Inc.	Minneapolis, IN, United States	0.104%
Media / Decals / Literature	Tyler Wrap Company, Inc.	Tyler, TX, United States	0.057%
Raw Material	Regal Machine, Mfg.	Winona, TX, United States	0.050%
Plastic - Vacform & Inj.	Fastenal Company	Winona, MN, United States	0.042%
Floor - Substrate & Covering	The Braun Corporation	Tyler, TX, United States	0.041%
Media / Decals / Literature	Sharpline Converting Inc.	Wichita, KS, United States	0.024%
Wire / Harness / Loom	Digi-Key Corporation 113	Thief River Falls, MN, United States	0.024%
Metal Fabrication	CNC Fabrications LLC	Tyler, TX, United States	0.023%



Wire / Harness / Loom	H&L Manufacturing Co.	Ogden, UT, United States	0.011%
Wire / Harness / Loom	Navico Group Americas LLC	Chicago, IL, United States	0.004%
Electronics / Switches & Senso	Fastenal Company	Winona, MN, United States	0.003%
Metal Fabrication	MORryde International, Inc.	Elkhart, IN, United States	0.003%
Hardware - Nuts Bolts & Screws	Fastenal Company	Winona, MN, United States	0.001%
Hardware - Nuts Bolts & Screws	Caplugs	Carol Stream, IL, United States	0.001%
Media / Decals / Literature	The Braun Corporation	Tyler, TX, United States	0.001%
Grand Total			74.435%

Cost of final assembly as related to
cost of vehicle (percentage): 4.93%

Description of final assembly activities
detailed on next page.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Description of final assembly activities:

1. Braun's Final Assembly manufacturing processes consist of the following:

- (a) "Seat Installation": Installation of seats in the first, second, and third seating rows in the vehicle.
- (b) "Subsystem Installation": Installation of new lines for rear brake, fuel, heat, and air conditioning components.
- (c) "Fuel Tank System Installation": Installed the fuel tank. Installation and interconnection of the new fuel fill pipe assembly to meet the relocated and rotated OEM fuel tank.
- (d) "Exhaust Installation & Interconnection": Installing a new exhaust pipe, hanger brackets, and the OEM muffler.
- (e) "Engine/Transmission/Front Suspension Assembly Modifications": Disconnecting the engine, transmission, and front suspension assembly in order to raise the body to accommodate the lowered floor. Modifications are made to the engine, transmission, and front suspension assembly, involve adding various types of spacing brackets, custom steering shaft extension, and two engine cradle safety bracket tube extensions, and reconnecting the engine, transmission, and front suspension assembly.
- (f) "Slide Door Installation": Doors are installed and tested to verify proper travel and function.
- (g) "Rear Axle & Suspension Installation & Interconnection": Installation of the rear axle, addition of brake line extensions, and rear brake lines fastened.
- (h) "Flooring & Walls Installation": Installation of flooring substrate and covering and carpet or plastic panels with carpeted inserts. Walls are covered with new interior panels and trims.
- (i) "Rear Bumper Installation": Installation of the reinforced rear bumper.
- (j) "Wiring Installation": Installation of new and reroute existing wiring to accommodate the new seating systems, airbag systems, wheelchair ramp system, slide door operation, and other accessibility modifications such as kneeling function.
- (k) "Ramp Installation & Interconnection": Installation and interconnection of the wheelchair ramp.
- (l) "Undercoating": Newly installed components are coated, and the entire floor is undercoated.
- (m) "Inspection & Certification": The vehicle is inspected, weighed, road tested, identified repairs completed if required, and recertified to all applicable FMVSS by Braun in preparation of the vehicles for delivery.



PRE-AWARD FMVSS COMPLIANCE CERTIFICATION

As required by 49 CFR part 663 - Subpart D, State of WA - 9/2-17" Seats, BA, Roof (the recipient) certifies that it received, at the pre-award stage, a copy of The Braun Corporation's (the manufacturer) self-certification information stating that the vehicles, Promaster CompanionVan Fold-Out Ramp - Long Cut , will comply with the relevant Federal Motor Vehicle Safety Standard issued by the National Highway Traffic Safety Administration in 49 CFR part 571.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager



TIRE AND LOADING INFORMATION

SEATING CAPACITY	TOTAL	FRONT	REAR

The combined weight of occupants and cargo should never exceed Kg or Lbs.

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT			
REAR			
SPARE			

FD-327

THE BRAUN CORPORATION
631 w. 11th Street, Winamac, Indiana 46996

This Vehicle was altered by THE BRAUN CORPORATION in
/ and as altered it conforms to all applicable
Federal Motor Vehicle Safety Bumper and Theft Prevention Standards
affected by the alteration and in effect in /

Vehicle Type: MVP
Vin #:

Available Payload Capacity: LBS(Without Passengers & Wheelchairs)

MANUFACTURED BY:
THE BRAUN CORPORATION ENTERTAIN.COM®
DATE OF MANUFACTURE MO. YR.

INCOMPLETE VEHICLE MANUFACTURED BY:
CHRYSLER CORPORATION
DATE INC. VEH. MFD. MO. YR.

GVWR(KG) LBS.
GAWR FRONT(KG) LBS.
WITH TIRES
_____ RIMS, @ _____ PSI COLD
 (kPa cold)

GAWR REAR(KG) LBS.
WITH TIRES
_____ RIMS, @ _____ PSI COLD
 (kPa cold)

"THIS VEHICLE HAS BEEN COMPLETED
IN ACCORDANCE WITH THE PRIOR
MANUFACTURERS' IVD, WHERE APPLICABLE.
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY STANDARDS,
[AND BUMPER AND THEFT PREVENTION
STANDARDS, IF APPLICABLE]
IN EFFECT IN (/)."
(MONTH / YEAR)

VEHICLE IDENTIFICATION NO:

VEHICLE TYPE: MPV

Pre-Award Buy America**PURCHASER'S REQUIREMENTS CERTIFICATION**

Purchaser - FTA Grantee	State of WA - 9/2-17" Seats, BA, Roof
Quantity	1
Description of Vehicles	Promaster CompanionVan Fold-Out Ramp - Long Cut
Bid / RFP Contract Number	RFP# 23-T041

As required by Title 49 of the CFR, Part 663 - Subpart B, **BraunAbility | The Braun Corporation of Winamac, Indiana** (the manufacturer) certifies that the documentation submitted in response to **State of WA - 9/2-17" Seats, BA, Roof** (the recipient) rolling stock procurement solicitation meets the required Bid Specification Compliance with the Purchaser's Solicitation Specifications.

The manufacturer certifies that the rolling stock vehicles to be manufactured for the recipient are the same product described in the recipient's solicitation specification and the manufacturer is a responsible manufacturer with the capability to produce a rolling stock vehicle that meets the recipient's specifications set forth in the recipient's solicitation.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Pre-Award Buy America Certification

Manufacturer: The Braun Corporation
Bid No. BA2962716
Description: Wheelchair Accessible Vehicle
End User: State of WA Short Cut 11/1 w/ 17" Seats
VIN / Job: BA2962716
Final assembly activities completed at: The Braun Corporation
 631 W 11th St. Winamac, IN 46996

Component	Manufacturer	Country of Origin	C % of Total Cost
Restraint Systems & Belts	QStraint USA	Atlanta, GA, United States	13.562%
OEM Chassis			12.796%
Seats - Seating & Fabric	Freedman Seating Company	Bedford Park, IL, United States	10.875%
Heat, Ventilation, Air Cond.	TransAir	Dallastown, PA, United States	6.747%
Substantial Transformation	The Braun Corporation	Tyler, TX, United States	5.254%
Floor - Substrate & Covering	QStraint USA	Atlanta, GA, United States	4.414%
Substantial Transformation Gross	The Braun Corporation	Tyler, TX, United States	3.745%
Plastic - Vacform & Inj.	Patrick Industries Inc	Elkart, IN, United States	2.866%
Weldment	Regal Machine, Mfg.	Winona, TX, United States	2.451%
Metal Fabrication	Regal Machine, Mfg.	Winona, TX, United States	1.781%
Ramp Parts & Assemblies	The Braun Corporation	Tyler, TX, United States	0.988%
Sub Assembly	A & M Systems	Elkhart, IN, United States	0.780%
Motor / Actuator / Gas spring	A & M Systems	Elkhart, IN, United States	0.773%
Consumables & Tooling	Fastenal Company	Winona, MN, United States	0.740%
Sub Assembly	QStraint USA	Atlanta, GA, United States	0.568%
Exhaust System & Components	Jones Muffler Shop	Ben Wheeler, TX, United States	0.371%
Wire / Harness / Loom	LGS Group Inc	Reno, NV, United States	0.333%
Electronics / Switches & Senso	LGS Group Inc	Reno, NV, United States	0.316%
Floor - Substrate & Covering	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.303%
ADA & Special Equip.	Fastenal Company	Winona, MN, United States	0.285%
Bar Stock / Tubing	Marson International LLC	Elkhart, IN, United States	0.239%
Hardware - Nuts Bolts & Screws	Marson International LLC	Elkhart, IN, United States	0.214%
Wire / Harness / Loom	Vista Manufacturing Inc	Elkhart, IN, United States	0.205%
Plastic - Vacform & Inj.	Polymershapes LLC	St. Louis, MO, United States	0.178%
Electronics / Switches & Senso	Central Components Manufacturing LLC	Middlesex, NJ, United States	0.176%
Electronics / Switches & Senso	Navico Group Americas LLC	Chicago, IL, United States	0.126%
Consumables & Tooling	QStraint USA	Atlanta, GA, United States	0.118%
Electronics / Switches & Senso	Patrick Industries, Inc.	Minneapolis, IN, United States	0.115%
Metal Fabrication	Standard Integrated Solutions, Inc.	Winamac, IN, United States	0.110%
Media / Decals / Literature	Tyler Wrap Company, Inc.	Tyler, TX, United States	0.063%
Plastic - Vacform & Inj.	Fastenal Company	Winona, MN, United States	0.047%
Floor - Substrate & Covering	The Braun Corporation	Tyler, TX, United States	0.030%
Media / Decals / Literature	Sharpline Converting Inc.	Wichita, KS, United States	0.027%
Wire / Harness / Loom	Digi-Key Corporation 113	Thief River Falls, MN, United States	0.026%
Metal Fabrication	CNC Fabrications LLC	Tyler, TX, United States	0.026%



Raw Material	Regal Machine, Mfg.	Winona, TX, United States	0.014%
Wire / Harness / Loom	H&L Manufacturing Co.	Ogden, UT, United States	0.012%
Wire / Harness / Loom	Navico Group Americas LLC	Chicago, IL, United States	0.004%
Electronics / Switches & Senso	Fastenal Company	Winona, MN, United States	0.004%
Metal Fabrication	MORryde International, Inc.	Elkhart, IN, United States	0.003%
Hardware - Nuts Bolts & Screws	Fastenal Company	Winona, MN, United States	0.001%
Media / Decals / Literature	The Braun Corporation	Tyler, TX, United States	0.001%
Hardware - Nuts Bolts & Screws	Caplugs	Carol Stream, IL, United States	0.000%
Grand Total			71.684%

Cost of final assembly as related to
cost of vehicle (percentage): 5.45%

Description of final assembly activities
detailed on next page.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

Description of final assembly activities:

1. Braun's Final Assembly manufacturing processes consist of the following:

- (a) "Seat Installation": Installation of seats in the first, second, and third seating rows in the vehicle.
- (b) "Subsystem Installation": Installation of new lines for rear brake, fuel, heat, and air conditioning components.
- (c) "Fuel Tank System Installation": Installed the fuel tank. Installation and interconnection of the new fuel fill pipe assembly to meet the relocated and rotated OEM fuel tank.
- (d) "Exhaust Installation & Interconnection": Installing a new exhaust pipe, hanger brackets, and the OEM muffler.
- (e) "Engine/Transmission/Front Suspension Assembly Modifications": Disconnecting the engine, transmission, and front suspension assembly in order to raise the body to accommodate the lowered floor. Modifications are made to the engine, transmission, and front suspension assembly, involve adding various types of spacing brackets, custom steering shaft extension, and two engine cradle safety bracket tube extensions, and reconnecting the engine, transmission, and front suspension assembly.
- (f) "Slide Door Installation": Doors are installed and tested to verify proper travel and function.
- (g) "Rear Axle & Suspension Installation & Interconnection": Installation of the rear axle, addition of brake line extensions, and rear brake lines fastened.
- (h) "Flooring & Walls Installation": Installation of flooring substrate and covering and carpet or plastic panels with carpeted inserts. Walls are covered with new interior panels and trims.
- (i) "Rear Bumper Installation": Installation of the reinforced rear bumper.
- (j) "Wiring Installation": Installation of new and reroute existing wiring to accommodate the new seating systems, airbag systems, wheelchair ramp system, slide door operation, and other accessibility modifications such as kneeling function.
- (k) "Ramp Installation & Interconnection": Installation and interconnection of the wheelchair ramp.
- (l) "Undercoating": Newly installed components are coated, and the entire floor is undercoated.
- (m) "Inspection & Certification": The vehicle is inspected, weighed, road tested, identified repairs completed if required, and recertified to all applicable FMVSS by Braun in preparation of the vehicles for delivery.

PRE-AWARD FMVSS COMPLIANCE CERTIFICATION

As required by 49 CFR part 663 - Subpart D, State of WA Short Cut 11/1 w/ 17" Seats (the recipient) certifies that it received, at the pre-award stage, a copy of The Braun Corporation's (the manufacturer) self-certification information stating that the vehicles, Promaster CompanionVan Fold-Out Ramp - Short Cut , will comply with the relevant Federal Motor Vehicle Safety Standard issued by the National Highway Traffic Safety Administration in 49 CFR part 571.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

TIRE AND LOADING INFORMATION			
SEATING CAPACITY	TOTAL	FRONT	REAR
The combined weight of occupants and cargo should never exceed Kg or Lbs.			
TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION FD-327
FRONT			
REAR			
SPARE			

THE BRAUN CORPORATION	
631 w. 11th Street, Winamac, Indiana 46996	
This Vehicle was altered by THE BRAUN CORPORATION in / and as altered it conforms to all applicable Federal Motor Vehicle Safety Bumper and Theft Prevention Standards affected by the alteration and in effect in /	
Vehicle Type: MVP Vin #:	
Available Payload Capacity:	LBS(Without Passengers & Wheelchairs)

MANUFACTURED BY: THE BRAUN CORPORATION ENTERVAN.COM®	
DATE OF MANUFACTURE	MO. YR.
INCOMPLETE VEHICLE MANUFACTURED BY: CHRYSLER CORPORATION	
DATE INC. VEH. MFD.	MO. YR.
GVWR(KG) LBS.	
GAWR FRONT(KG) LBS.	
WITH TIRES	
RIMS, @ PSI COLD (kPa cold)	
GAWR REAR(KG) LBS.	
WITH TIRES	
RIMS, @ PSI COLD (kPa cold)	
"THIS VEHICLE HAS BEEN COMPLETED IN ACCORDANCE WITH THE PRIOR MANUFACTURERS' IVD, WHERE APPLICABLE. THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS, [AND BUMPER AND THEFT PREVENTION STANDARDS, IF APPLICABLE] IN EFFECT IN (/)." (MONTH / YEAR)	
VEHICLE IDENTIFICATION NO:	
VEHICLE TYPE: MPV	

Pre-Award Buy America**PURCHASER'S REQUIREMENTS CERTIFICATION**

Purchaser - FTA Grantee	State of WA Short Cut 11/1 w/ 17" Seats
Quantity	1
Description of Vehicles	Promaster CompanionVan Fold-Out Ramp - Short Cut
Bid / RFP Contract Number	BA2962716

As required by Title 49 of the CFR, Part 663 - Subpart B, **BraunAbility | The Braun Corporation of Winamac, Indiana** (the manufacturer) certifies that the documentation submitted in response to **State of WA Short Cut 11/1 w/ 17" Seats** (the recipient) rolling stock procurement solicitation meets the required Bid Specification Compliance with the Purchaser's Solicitation Specifications.

The manufacturer certifies that the rolling stock vehicles to be manufactured for the recipient are the same product described in the recipient's solicitation specification and the manufacturer is a responsible manufacturer with the capability to produce a rolling stock vehicle that meets the recipient's specifications set forth in the recipient's solicitation.

Date: 08/08/2023

Signature: *Andy Conner*

Print Name: Andy Conner

Title: Commercial Vehicle Manager

SUMMARY OF STANDARD WARRANTIES

Forest River Van dba MobilityTRANS / Ford Transit

Warranty	Miles	Years
ADA Conversion	Unlimited	1
Chassis	36,000	3
Drive Motor	100,000	8
Air conditioner	36,000	3
Lift/Ramp	Unlimited	5
EV Battery	100,000	8
Battery Degradation Warranty	100,000	8
Propulsion Control System	100,000	8
Axles	60,000	5

SUMMARY OF STANDARD WARRANTIES

Forest River Van dba MobilityTRANS / Ford Transit

Warranty	Miles	Years
ADA Conversion	Unlimited	1
Chassis	36,000	3
Engine	60,000	5
Transmission	60,000	5
Air conditioner	36,000	3
Lift/Ramp	Unlimited	5

SUMMARY OF STANDARD WARRANTIES
Braun / Toyota Sienna

Warranty	Miles	Years
ADA Conversion	36,000	3
Chassis	36,000	3
Engine	60,000	5
Transmission	60,000	5
Air conditioner	36,000	3
Lift/Ramp	Unlimited	5

SUMMARY OF STANDARD WARRANTY
Braun / Toyota Sienna Hybrid

Warranty	Miles
ADA Conversion	36,000
Chassis	36,000
Engine	60,000
Transmission	60,000
Hybrid-Related Components (hybrid battery, battery control module, hybrid control module and inverter with converter)	100,000
Air conditioner	36,000
Lift/Ramp	Unlimited

IES

Years
3
3
5
5
8
3
5

SUMMARY OF STANDARD WARRANTIES
Braun / Chrysler Voyager

Warranty	Miles	Years
ADA Conversion	36,000	3
Chassis	36,000	3
Engine	60,000	5
Transmission	60,000	5
Air conditioner	36,000	3
Lift/Ramp	Unlimited	5

SUMMARY OF STANDARD WARRANTIES
Braun / Ram Promaster

Warranty	Miles	Years
ADA Conversion	36,000	3 years
Chassis	36,000	3 years
Engine	60,000	5 years
Transmission	60,000	5 years
Air conditioner	Unlimited	3 years
Lift/Ramp	Unlimited	5 years