



## **2014 ELDORADO AEROTECH 240 20 PASSENGERS FRONT LIFT COMPOSITE**

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**820 Office Park Circle  
Lewisville, TX 75057  
972-221-4440 or 800-880-5620  
Fax: 972-221-5440  
Web Site: [alliancebusgroup.com](http://alliancebusgroup.com)  
E-Mail: [jasonroy@alliancebusgroup.com](mailto:jasonroy@alliancebusgroup.com)**

# SECTION I

**SECTION "M"**  
**24' 20 Passenger Composite Bus**  
**RESPONSE SHEET**

**BASE VEHICLE**

**COST PER UNIT**

Transit Bus (gas engine) \$ 62,980.00 / ea.

**CHASSIS SPECIFICATIONS**

Specify Overall Vehicle Length (outside of front bumper to outside of Rear bumper): 24' 8"

Overall vehicle length: 282" minimum 296"  
 307" maximum \_\_\_\_\_

Width: Exterior 96" minimum 96"  
 Interior 91" minimum 91"

Height Exterior 110" minimum 115"  
 124" maximum \_\_\_\_\_  
 Interior 75" minimum 79"

Wheelbase: 176" minimum \_\_\_\_\_  
 186" maximum 186"

**AIR CONDITIONING**

Make and Model of Rear A/C Unit and Cooling Capacity of rear Unit BTU's/Hr. Include literature on unit being proposed.

MAKE/MODEL Mobile Climate Control- MCC833MAX

BTU/HR of Rear Unit only 80,000 BTU

**HEATING**

BTU/HR of Rear Unit only 65K BTU

**OPTIONAL ITEMS****COST**

1.	CNG Conversion Ford Chassis	\$ <u>17,500.00</u> /ea.
1.	CNG Bifuel Conversion Ford Chassis	\$ <u>Not Available</u> /ea.
2.	Propane Dedicated Conversion	\$ <u>11,500.00</u> /ea.
3.	Propane Dual Fuel Conversion	\$ <u>10,500.00</u> /ea.
5.	Back-Up Monitor System	\$ <u>750.00</u> /ea.
6.	Two-way radio (UHF)	\$ <u>750.00</u> /ea.
7.	Two-way radio (VHF)	\$ <u>750.00</u> /ea.
8.	Two-way radio (800 MHZ)	\$ <u>1050.00</u> /ea.
9.	Driver's Shield	\$ <u>185.00</u> /ea.
10.	Painted lower skirts	\$ <u>450.00</u> /ea.
11.	Outside Passenger Door Switch	\$ <u>95.00</u> /ea.
12.	Bus Camera System:	\$ <u>5200.00</u> /ea.
13.	Fabric Insert on Ceiling	\$ <u>475.00</u> /ea.
14.	Street Side Exhaust	\$ <u>215.00</u> /ea.
15.	Integrated Child Seats	\$ <sup>1385.00 Double/1000.00 Single</sup> <u>                    </u> /ea.
16.	Vinyl Seats (Price Deduction)	\$ <u>(1120.00)</u> /ea.
17.	Public Address System	\$ <u>350.00</u> /ea.
18.	Passenger Signal System Pull Cord	\$ <u>400.00</u> /ea.
19.	Passenger Stop request Signs	\$ <u>250.00</u> /ea.
20.	Fare Collection Box	\$ <u>13,885.00 as spec'd</u> /ea.

21.	Destination Signs	\$ <u>Amber-5450.00 Color-6960.00</u> /ea.
22.	Bicycle Racks	\$ <u>1895.00</u> /ea.
23.	Delete B pillar and copilot seat (Price Deduction)	\$ <u>(200.00)</u> /ea.
24.	Delete Altro Chroma Flooring (Price Deduction)	\$ <u>(400.00)</u> /ea.
25.	Delete Yellow Powder Coating on Handrails, Grab Rails and Stanchions. (Price Deduction)	\$ <u>(200.00)</u> /ea.
1.	100% Nida-Core <sup>®</sup> structure	\$ <u>875.00</u> /ea.
27.	Composite floor	\$ <u>1250.00</u> /ea.
28.	Side Door Slide Out Battery Box	\$ <u>850.00</u> /ea.
29.	Delete three foldaway seats (Price Deduction)	\$ <u>(1200.00)</u> /ea.
30.	Diesel Engine:	\$ <u>12825.00 GM</u> /ea.
31.	Rear Spare Tire Holder:	\$ <u>150.00</u> /ea.
32.	Adjustable Rear Suspension System:	\$ <u>995.00</u> /ea.

A list of optional equipment and/or accessories shall be provided. The list must contain:

- Item
- Description and functionality detail
- Cost of item installed in final delivery of vehicle
- Any changes to listed specifications as outlined above to accommodate options

**RFP EXECPTIONS:**

Supplier must list any exceptions here to be used as a part of the Proposal evaluation and analysis. Please list the roman numerical on the standard specs or the number for the options when listing any Proposal exceptions.

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## **ADDITIONAL OPTION TO CONSIDER**

Following this page is information on the **ACT-735HD**. This a **82,000 BTU AC System** that exceeds the requirements of the Air Conditioning specifications.

This option can be chosen by Oklahoma Agencies at **no additional cost** to the base price.

Thank you for your consideration!



## American Cooling Technology, Inc.

715 Willow Spring Lane  
York, Pennsylvania 17406  
717 767-2775  
[www.actusa.us.com](http://www.actusa.us.com)

### AIR CONDITIONING SPECIFICATION

#### MODEL ACT-732 HD (82,000 Btu/Hr)

This air conditioning system is an American Cooling Technology, Inc. (A.C.T.) model ACT-732 HD. The driver's area air conditioning system and the passenger area air conditioning system are completely independent of each other.

**Compressors:** Two (2) compressors. One (1) is the OEM supplied compressor driven off the vehicle engine which is specific to the OEM driver's area air conditioning system. The second compressor is for the passenger area air conditioning system. This compressor is driven off the vehicle engine and is nominal ten (10) cubic inch displacement.

**Passenger Area Evaporator:** One (1) A.C.T. Model EZ-7 passenger area evaporator rated up to 70,000 btu/hr. Evaporator has two (2) dual shaft blower assemblies. The motors are minimum three (3) speed continuous duty permanent magnet and utilize resistors to limit amperage requirements. Drain pan is part of the evaporator and not part of the evaporator cover. Return air filter is located at the coil and is easily accessible for maintenance without removal of the evaporator cover. The evaporator coil is copper tube (internally enhance) with aluminum fins. Evaporator assembly is galvanized steel for maximum structural integrity. The thermal expansion valve utilizes O-ring connections. Evaporator cover has no sharp edges and must be fire retardant in compliance with FMVSS 302 fire retardant specification standards. High Pressure and Low Pressure (switch) protection are part of the evaporator assembly to maximize compressor and entire system protection. Evaporator air outlet louvers are non-adjustable to increase airflow throughout the vehicle. Coil is completely enclosed inside the evaporator housing to increase coil protection. Motors are mounted on rubber bushings for added vibration isolation and ease of motor removal. Air flow is free blow.

**Driver's area in-dash evaporator:** The OEM supplied drivers in-dash evaporator is utilized.

**Condenser:** One (1) A.C.T. Model CS-32 skirt mounted condenser rated @ 70,000 btu/hr. Condenser has two (2) motors rated at 2460 CFM. The 12 inch diameter low profile condenser motors are water sealed. The condenser housing is constructed of heavy-duty aluminum. The coil is copper tube (internally enhanced) with aluminum fins. The motors pull air through the coil and distribute air away from the vehicle floor. The condenser is installed in such a manner to assure the entire coil face area is exposed to fresh air from the outside of the vehicle skirt (the skirt of the vehicle will not in any way interfere with direct airflow through the coil). The filter drier and sight glass is located on the condenser and all fitting connections on the condenser and filter drier are O-ring. Electrical connections are corrosion resistant.

**Radiator mount condenser:** The OEM supplied radiator mounted condenser located in front of the radiator is utilized.

This air conditioning system utilizes environmentally friendly R-134A. Refrigerant hoses are Aeroquip, model GH-134 or approved equal coupled with plated steel Aeroquip E-Z Clip fittings for maximum resistance to corrosion, refrigerant permeation, and moisture ingress. Refrigerant fittings and hose are SAE specification J2064 compliant.

A three (3) speed fan switch and a rotary thermostat control are included and are located in an easily accessible location at the driver's area. All wiring is color coded. The entire electrical system is protected with manual reset circuit breakers and relays.

The air conditioning system is supported by a two (2) year unlimited mileage limited warranty.

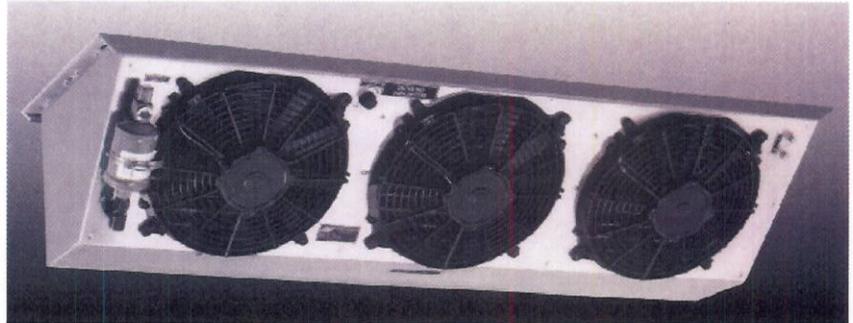
# BUS AIR CONDITIONING

# ACT BY PROAIR

## CS-3 CONDENSER

THE A.C.T. **CS-3** CONDENSER IS DESIGNED FOR SKIRT MOUNT APPLICATIONS. WE HAVE MANUFACTURED THIS CONDENSER SPECIFICALLY FOR THE TRANSPORTATION INDUSTRY.

IT'S LOW PROFILE, LIGHT WEIGHT ALUMINUM STRUCTURE, ENHANCED AIRFLOW, PERFORMANCE, SERVICEABILITY, AND INSTALLATION EASE ARE THE RESULT OF MANY YEARS' EXPERIENCE IN THIS INDUSTRY.



### ADVANCED FEATURES

- Highgrade, Lightweight, Rust Proof Aluminum
- Internally Enhanced Copper Tubing Increases System Performance
- Integral Sightglass/Filter Drier and 100% O-Ring Connections For Maximum Leak Protection
- Unequalled Heat Rejection....
  - Lower Cooling Temperatures
  - Lower Head Pressures
- 12 Inch Diameter Fan for Increased Airflow
- Sealed Motor Design
- Two Electrical Connections

### OPTIONS

- Condenser or Skirt Mounted Air Inlet Grill
- 12 Volt or 24 Volt Motors
- Winter Protection Kit

**2 YEAR  
LIMITED WARRANTY**

**AMERICAN COOLING TECHNOLOGY, Inc.**

[www.actusa.us.com](http://www.actusa.us.com)

715 Willow Springs Lane, York, PA 17406

Tel: 717.767.2775 ~ Fax: 717.767.3658

**Toll Free: 877.228.4247**

### SPECIFICATIONS

**RATING: Up to 82,000 Btu/Hr**

**AIRFLOW: 3690 cfm (4703 m3/hr)**

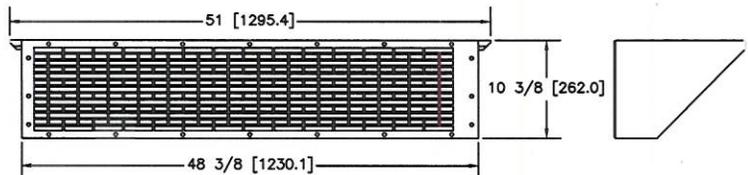
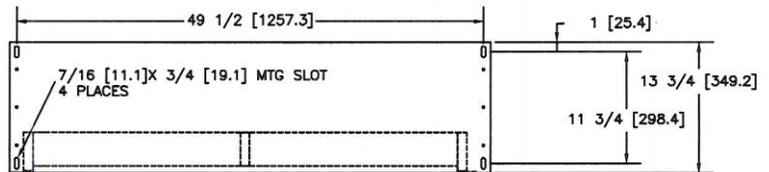
**AMPERAGE DRAW: 32 Amps @ 13.5 Volts  
16 Amps @ 27 Volts**

**CONDENSER FANS: 12 Inch Diameter, Sealed Motors**

**FILTER DRIER/SIGHTGLASS: 16 Cu. Inch Displacement w/ Moisture Indicator**

**WEIGHT: 54 lbs.**

Specifications subject to change without notice.



# ACT BY PROAIR

"SUCCESS THROUGH SIMPLICITY"

RELY ON OUR EXPERIENCE TO PROPERLY APPLY YOUR BUS AIR CONDITIONING SYSTEM

AMERICAN COOLING TECHNOLOGY, Inc.

www.actusa.us.com

715 Willow Springs Lane

York, PA 17406

717.767.2775

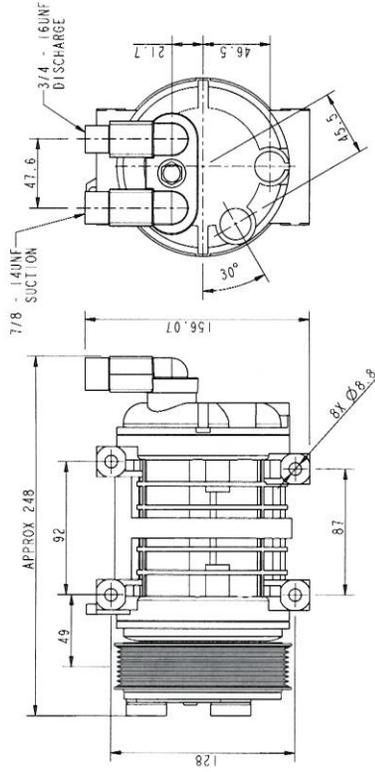
FAX: 717.767.3658

ACT BY ProAIR

"SUCCESS THROUGH SIMPLICITY"



## TM-16 COMPRESSOR



Displacement 10 cubic inches

### Standard features

- Refrigerant : R-134A
- Clutch coil: 12 volt or 24 volt DC.
- Available with either Type A or Poly-V pulleys.
- Available in either Ear-mount or Direct mount configurations.
- Rotation: either Clockwise & Counterclockwise
- Permissible speed: 700-6000 rpm

AMERICAN COOLING TECHNOLOGY, Inc.

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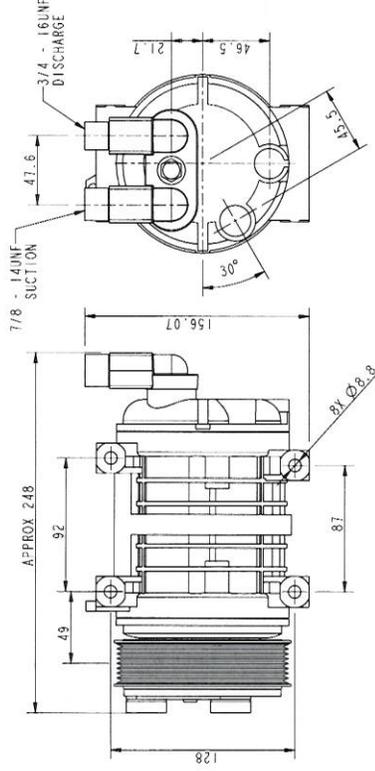
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ACT BY ProAIR

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SCHEDULE A



**SW797 SECTION M**  
**20 Passenger Front Lift Composite**

**EIDorado National Aerotech 240**  
**19 Passengers + Driver & Co-Pilot**  
**or 13 Ambulatory & 2 Wheelchair Passengers + Driver & Co-Pilot**

**STANDARD CHASSIS FEATURES**

Ford E450 Super Duty, dual rear wheel, cutaway chassis w/ tilt & cruise  
6.8 liter V10 gasoline engine  
176" wheelbase, 55 gallon fuel tank, 14,500 GVWR  
5 speed automatic transmission  
Driver's side air bag  
Drink console w/ 4 upholders & storage  
Steel belted radial tires w/ white steel wheels (LT225/75Rx16)  
Dual batteries  
4 wheel disc brakes w/ ABS  
In dash a/c, heat, & defrost w/ dedicated compressor  
Leaf spring suspension

**UPGRADES TO STANDARD CHASSIS FEATURES**

Chassis stretch to "186  
Co-pilot cab door  
Co-pilot sun visor  
Gateway Intermotive fast idle w/ interlock  
Battery Cable, 4/0  
Spring Spacer, lift side (E450)  
Front end tire alignment  
Stainless steel inserts  
Spare tire & wheel - 16"  
Tire valve extensions  
Fuel sender  
Hour meter  
Voltmeter  
Aluminum running board - Driver's side  
Aluminum running board - Passenger's side  
Exhaust routed to street side  
Rear tow hooks  
Energy absorbent Help bumper, rear Aerotech

**STANDARD BODY FEATURES**

CRASH TESTED, impact resistant, steel reinforced composite body  
Bright white exterior w/ durable gel coat finish  
29" x 41" tinted T-slide passenger windows  
Exterior DOT compliant clearance & marker lights  
3/4" sealed & undercoated exterior grade plywood floor  
In-dash driver control panel w/ rocker switches  
Color, number, & function coded electrical wiring  
Interior central electrical compartment located over driver's cab door

Trac-Lock - Steel Unistrut in floor and wall for seat mounting  
Interior courtesy lights throughout passenger compartment  
White fiberglass headliner & sidewall panels  
Black transit grade floor rubber w/ ribbed aisle

## **UPGRADES & OPTIONAL FEATURES**

### **BODY STRUCTURE**

Marine grade plywood floor in lieu of exterior grade

### **DOORS**

36" electric in-body entry door (32" clear width)  
Kubota entry door key lock  
LED stepwell light  
Exterior passenger entry door LED light - Hooded  
Left hand entry handrail - Powder coated yellow  
Right hand entry handrail - Powder coated yellow  
All stanchions and fittings to be yellow  
Yellow step nosing

### **WINDOWS**

41" x 29" window Starquest Top-T

### **CLIMATE CONTROL**

A/C, MCC 833 MAX 80,000 BTU a/c w/ dual compressors - Gas  
Proair 465, 65,000 BTU rear heater

### **PASSENGER SEATS**

Freedman Featherweight mid back double passenger seats  
Freedman Featherweight mid back - 5 place rear row  
Freedman 3-step double mid Notch-back forward facing foldaway seat

### **SEAT UPHOLSTERY**

Level 5 fabric upholstery

### **SEAT ACCESSORIES**

Slim line flip up armrests, aisle side  
Padded grab handles, aisle side  
Freedman U.S.R. retractable seat belts  
Extension, 12" Seatbelt (2)

### **DRIVER'S SEAT**

OEM Driver seat and Co-Pilot seats covered to match passengers seats  
Matching Level 5 fabric upholstery

### **ELECTRICAL FEATURES - INTERIOR**

Speaker in driver's door

Speaker in driver's door

4 Speakers

Interior courtesy LED lights throughout passenger compartment

Interior, 5 exit red LED lights

### **STORAGE OPTIONS**

Driver's storage compartment

### **SAFETY FEATURES & EQUIPMENT**

Reverse alarm

Heated & remote controlled exterior mirrors with turn signals - Velvac

Driver's passenger view mirror, 6" x 16" flat

24 unit first aid kit

Deluxe Bloodborne Pathogen Kit

5 lb. fire extinguisher & triangle reflector kit

Rear window wide angle lens

### **INTERIOR FEATURES & FINISH**

Cove molding - floor rubber to seat rail

Altro Chroma flooring in lieu of black floor rubber w/ ribbed aisle

White gel coated fiberglass headliner

Overhead handrail - Powder coated yellow

### **WHEELCHAIR ACCESSIBILITY FEATURES**

Braun Century-2 wheelchair lift - front pump

Q-Straint QRT 8300 series, Slide & Click w/ height adjustable shoulder harness

Q-Straint webbing loops (4) per W/C #Q5-7580

Dual panel wheelchair lift doors - front

A.L. Hansen cam-over each door panel

LED - Exterior lift light

LED - Interior lift light

ADA interior signage

### **ELECTRICAL - EXTERIOR**

LED exterior lights

Armored LED exterior lights

Armored LED side mount turn signals

Daytime running lights

4" amber flashing lights

### **PAINT OPTIONS**

Blackout windows

Rustproofing (Zinc Chromate)

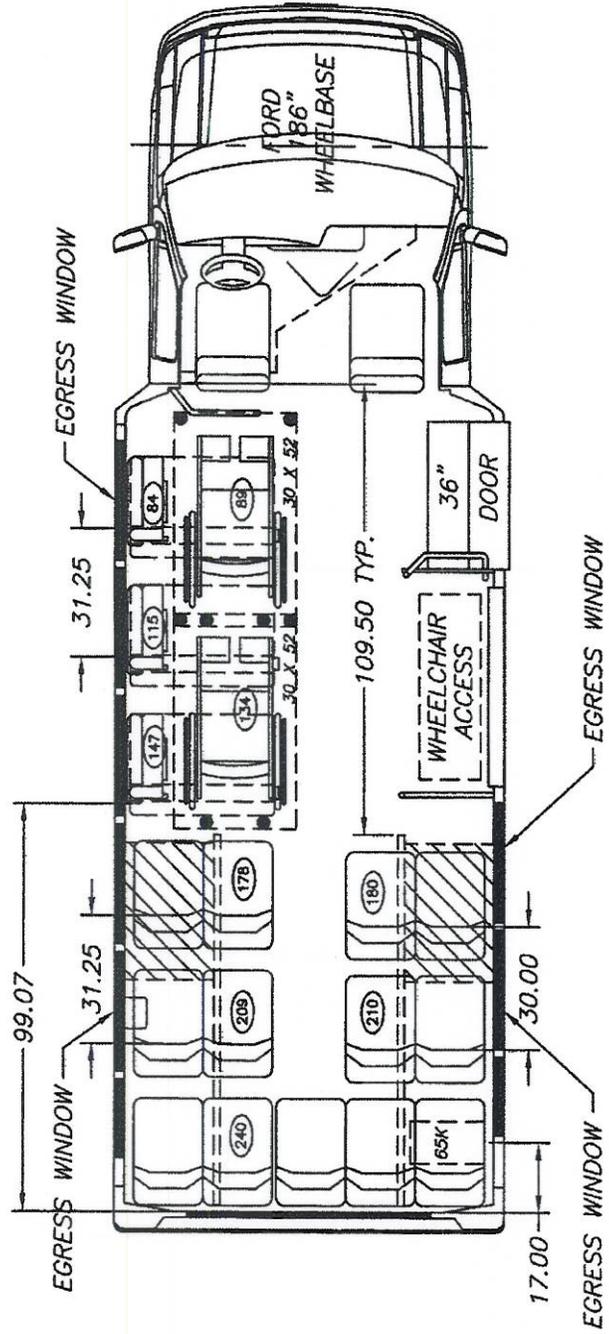
### **SUPPORT MATERIALS**

EIDorado National USB built parts manual

EIDorado National USB as built electrical schematics

Additional Ford ignition key & body keys (total of 3 per bus)

LEGEND  
 (S) = C/L FRONT AXLE TO PASS C.G.



DEALER APPROVAL  
 APPROVED  
 X  
 CUSTOMER SIGNATURE

DO NOT SCALE DRAWING  
 THIS DRAWING IS THE PROPERTY OF EL Dorado NATIONAL COMPANY, A THOR INDUSTRIES COMPANY AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.  
 REV. 03/10

DRAWING INFORMATION  
 DRAWN/MILLER CKD:  
 DATE: 4/15/14 SIZE: A  
 SCALE: 1/42  
 REV. 03/10

TOLERANCE UNLESS SPECIFIED  
 SEAT SPACING ± 1.0 (SEAT SPACING NOT TO BE LESS THAN 28.5")  
 RESTRAINTS ± 1.0 (W/C POSITIONS NOT TO BE SMALLER THAN 30 X 48)

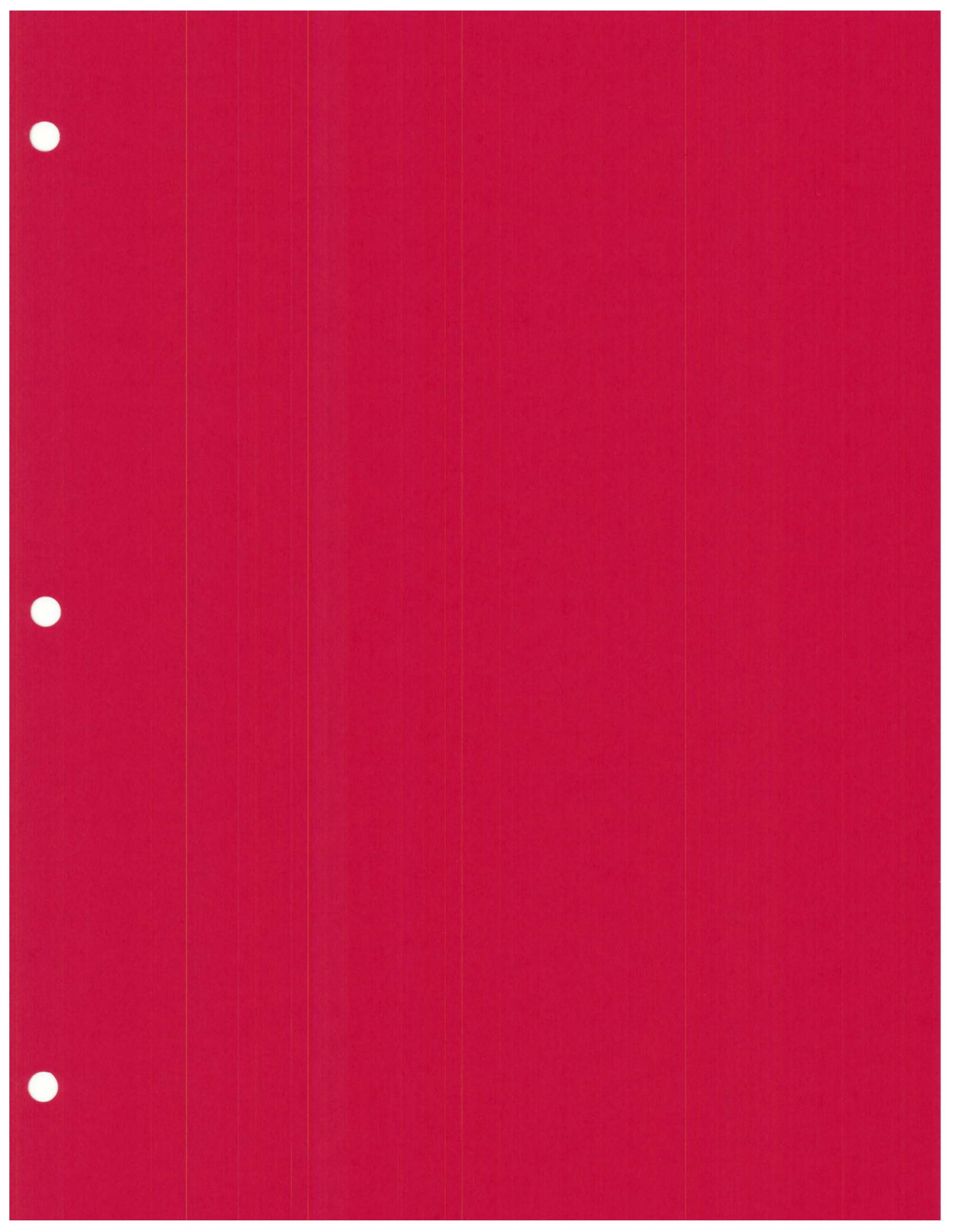
REV. BY DATE  
 - JPH 4/15/14  
 RELEASE TO PRODUCTION DESCRIPTION

Eldorado National  
 — an ASV company —  
 1655 WALL STREET  
 SALINA, KS. 67401

TITLE:  
 AEROTECH 240  
 36" ENTRY DOOR / WC DOOR FRONT)

UNIT NUMBER  
 ATF2499-DH97

PAGE  
 1 of 1



# AEROTECH



## Unmatched Flexibility / Legendary Reliability

20' to 25' CUTAWAY BUS



Since 1979 the Aerotech continues to provide the best value for durability and carefree operation in the cutaway market! No matter your transportation need, the Aerotech offers unmatched dependability, safety, floorplan flexibility and hundreds of options.

Our "Aero" line is built using a steel-reinforced composite body construction that is highly resistant to impact, rust and corrosion. Side and rear impact testing demonstrates the durability and strength of the "Aero" body composite construction!



### GREAT BRANDING

Your bus is a reflection of your company and brand so you want it to make a good impression. We offer polished paint schemes, full color/photo quality decals, and beautiful upholstery on seats, walls and/or ceilings. We will work with you to outfit your bus just the way you need it!



### WORRY-FREE MAINTENANCE

From the floor to the door we have you covered. Unlike other buses our entry door frames, wheelchair lift door frames and step wells are made with powder coated stainless steel to ensure these critical, exposed areas will last.



### NOT ALL BUSES ARE CREATED EQUAL

We've got you covered no matter your transportation needs. Eldorado National has the versatility to give you the floorplans you need and a large selection of options to meet your specific requirements. Best of all, our products share three key qualities; they are the safest, most reliable and highest value buses on the market.

Eldorado   
National - Kansas

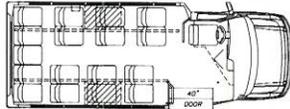
DESIGNED AND BUILT IN THE USA!



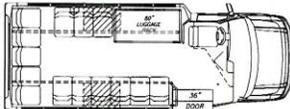
### POPULAR FLOORPLANS

(Note: this is only a partial listing of available floorplans. To find a floorplan meeting your exact needs, contact your ElDorado National dealer.)

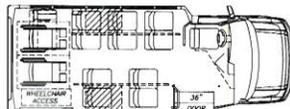
#### 20' MODEL



17 Passengers

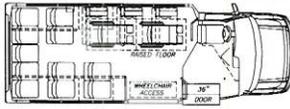


14 Passenger, perimeter seating with 60" Luggage Rack

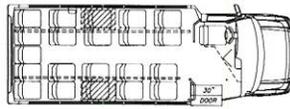


10 Passenger, Rear Lift, 2 Wheelchair positions

#### 22' MODEL

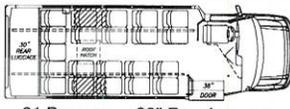


11 Passengers, 2 Wheelchair positions

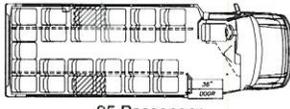


21 Passenger

#### 24' MODEL



21 Passenger, 30" Rear Luggage

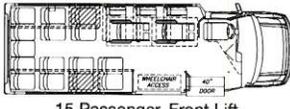


25 Passenger

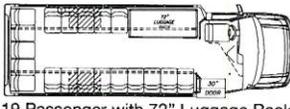


16 Passengers, Rear Lift, 2 Wheelchair positions

#### 25' MODEL



15 Passenger, Front Lift, 2 Wheelchair positions



19 Passenger with 72" Luggage Rack

TECHNICAL SPECIFICATIONS	20' MODEL	22' MODEL	24' MODEL	25' MODEL
GVWR	11,500 -12,500 lbs.	12,500 -14,050 lbs.	14,500 lbs.	14,500 lbs.
Body Length	21' 7"	23' 2"	24' 8"	25' 1"
Body Width	96"	96"	96"	96"
Wheelbase	138"	158"	176"	186"
Approach Angle (unloaded)	22°	22°-27°	27°	27°
Breakover Angle (unloaded)	15°	15°	15°	15°
Departure Angle (unloaded)	10°	10°	10°	10°
Seating	Up to 17	Up to 21	Up to 25	Up to 25

Body Height	115"
Interior Height	79" / Flat Floor: 74"
Entry Door Step Height-Front Standard Floor:	11.5"
Wheelchair Lift Locations	Front or Rear Doors
Available Engines	Ford Gas 5.4L V8, 6.8L V10 / Chevy Gas 6.0L V8, Diesel 6.6L V8
Passenger HVAC	Ranging from 30,000 to 114,000 BTU
Brakes	ABS Disc Front & Rear
Tires	LT225/75R16
Electrical System	EP3
Suspension	Front Coil Spring/Rear: Leaf Springs



At ElDorado National, we constantly improve our product; as a result all specifications and dimensions are subject to change without notice.

**ElDorado National - Kansas**

1655 Wall Street • Salina, KS 67401  
(800) 850-1BUS  
www.enconline.com

# Simplicity... Redefined

**NHTSA** **BRAUN CENTURY 2 SERIES™**



**THE BRAUN CORPORATION.**  
mobility products

# BRAUN CENTURY 2 SERIES

- fully automatic NHTSA compliant lift, operated by an attendant
- loading position - either direction
- interfaces with OEM interlocks
- lift mounted lights - active when interlocks are met and lift is powered
- hand-held control box with illuminated functions
- locking mechanical Inboard Barrier (IB), powder coated yellow for safety and high visibility, prevents operation if occupied
- pump design prevents platform folding when occupied, quiet operation & low current draw
- durable redesigned baseplate reduces lift weight and allows for quicker and easier service of hose/wiring
- easily installed, step-by-step installation instructions, no peripheral hardware required
- platform movement prevented during unsafe operation
- gas spring activated outer barrier detects roll stop occupancy as the platform leaves the ground, complete with durable rubber nose guard
- transition areas marked with durable high-gloss yellow powder coating for safety & visibility
- side or rear door application
- several platform widths and lengths
- dual handrails for security and convenience
- bridging feature permits the wheelchair user to board the lift from sidewalks or inclines
- floor to ground travel is 48"
- lifting capacity is 800 lbs
- integrated back-up pump
- equipped with an adjustable anti-rattle feature to avoid unpleasant noise in the vehicle during transit
- durable high-gloss powder coated finish
- Lift-Tite system stows the lift platform securely while the vehicle is in transit
- pump module with removable cover offers easy access to all components



Integrated dual handrails provide added security for wheelchair users and standees



Visual and audible warnings alert both passengers and attendants to unsafe conditions



Gas spring activated outer barrier detects roll stop occupancy as the platform leaves the ground



**THE BRAUN CORPORATION.**  
www.braunmobility.com



**1-800-THE LIFT**  
*For The Dealer Nearest You*

International Corporate Hdqrs: P.O. Box 310 Winamac, IN 46996 USA  
1-800-843-5438 (574) 946-6153 FAX: (574) 946-4670



THE  
**QRTMAX**  
Wheelchair & Occupant Securement Systems



A person is shown from behind, sitting in a wheelchair on a beach. Their arms are outstretched to the sides, and they are looking out at the ocean under a cloudy sky. The person is wearing a patterned short-sleeved shirt and a dark vest or harness. The wheelchair is a standard manual model. The overall scene is peaceful and evokes a sense of freedom and possibility.

*Our securement systems help make everything possible.*

The logo for Q'STRAIT is located at the bottom center of the image. It consists of the word "Q'STRAIT" in a white, sans-serif font, set against a blue oval background. The oval is part of a larger, metallic-looking graphic element that resembles a car's door handle or a similar automotive component.

**Q'STRAIT**

*Our vision is simple.*

*Continue to produce the most advanced securement systems.*



It all started over 20 years ago when Q'Straint introduced the integrated four-point wheelchair and occupant securement system. Since then Q'Straint has been recognized as a pioneer in the way wheelchair & occupant securement systems have been designed and tested.

Q'Straint maintains its high level of customer service and product quality simply by being the only company in the world that produces wheelchair & occupant securement systems exclusively. Since safety has always been a top priority at Q'Straint, our research and engineering along with our industry experience were used to establish industry standards for dynamic crash testing and static testing.

Q'Straint was also the first wheelchair and occupant securement company to be ISO 9000 registered and to offer a comprehensive training.

Now Q'Straint welcomes the newest product to our securement family, The QRT MAX. The QRT MAX is available with a variety of anchorages and your existing fleet can be retrofitted to use the unique QRT MAX.

With today's rapidly changing environment the QRT MAX innovative features will offer an even safer, simpler and easier method of use than ever before! This fast, safe, simple system will become synonymous in the industry with the term.... Hook and Go!



*The latest in a line of great innovations.*

# THE QRT MAX

## Introduction

### What makes the QRT MAX so unique?

Outstanding performance and innovative features that help increase efficiency! Welcome to the next generation of wheelchair securements.

Q'Straint has made some significant steps in the advancement of wheelchair securement systems over the last few years but the new state of the art QRT MAX is the most significant to date. The QRT MAX is the first ever securement that can self-lock and self-tension itself automatically. It is so easy to use that it takes only one hand to operate. The QRT MAX has been designed with a low profile to allow most types of wheelchairs to easily move into place without encountering obstructions. The next couple of pages will take you through these new features and more!



The QRT MAX shown here with the PLI

**hook & go.**

# KEY features:

One hand operation

No tensioning device

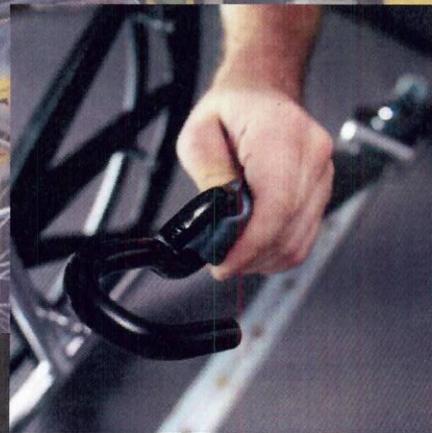
Low profile

PLI - Positive lock indicator

## One hand operation

### *Automatic.*

The unique automatic, self-locking and self-tensioning features enables the retractor to be operated by one hand. A true one-hand operation for the attendant. This offers a simpler and easier method of use than ever before.



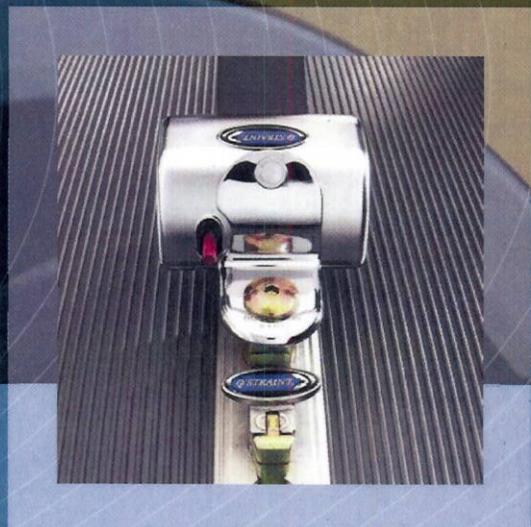
# THE QRTMAX

*Products designed with the driver and passenger in mind.*

## **No tensioning device**

### *Self-Locking and Self-tensioning*

As the innovator and leader of the automatic retractors, we take this responsibility very seriously and understand the meticulous quality that is required for this unique feature. No manual tensioning device is required, as the self-tensioning function will remove the slack from the retractors.



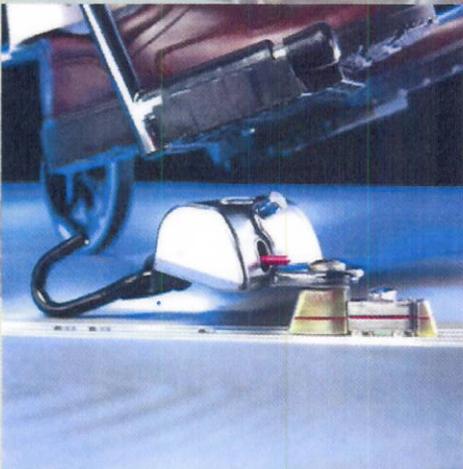
# KEY Features:

The QRT MAX fits easily under most footrests.

## Low Profile

*No knobs or handles to be used as an obstruction*

One of the great improvements over other retractors is the low profile design. This new feature allows the wheelchairs' footrests to pass over the retractor. Now the driver can easily move the occupant in to place without having to remove or go around the retractors. Another time saving feature!



## PLI Positive lock indicator

*Red line indicator - clearly identifies the fitting in a locked position*

A unique, patented feature that automatically provides another degree of reliability for the attendant. PLI removes any doubt as to whether the QRT MAX retractor is locked in the track or not by allowing the operator to view the red line indicator on the fitting. If the red lines are matched up the operator is ready to proceed! No guess work, a must for the operator, as they are responsible for properly securing the wheelchair passenger.



# THE QRTMAX

## Additional features and specifications

### Interchangeable retractors -

All securing retractors are the same in design, size and shape to avoid confusion in placement. Eliminates right, left, front or rear - NO GUESS WORK.

### Successfully crash tested with surrogate chair.

Meets all SAEJ2249, ISO10542, FMVSS 209,302, 210,222, CMVSS 209, CSA Z605, AS2596 and ADA requirements.

Crash tested at 30 mph at 20g's.

### ISO 9000 Registered

Manufactured under the ISO 9000 Quality System. Certificate submitted upon request

Outer casing made of hard durable metal

J-Hook design



Complete driver training program available

Extended webbing length

### Securing Retractors Swivel

Accommodates chairs of various widths

### Mounting

The retractors can be mounted using floor anchorages such as L track, A track, Slide 'N Click or bolted to floor.

Serialized for traceability



### Pin Connector

Retractors are equipped with pin connector brackets to easily secure occupant seat belts.



### Retractable height adjuster

Retractors can be used with a variety of shoulder and lap belt combinations.

Foot release lever

Patent Pending



Scooters



Small or large manual chairs



Electric

# THE QRT MAX

## Additional information and options

The QRT MAX has been designed to be compatible with most wheelchairs and a variety of anchorages. The QRT MAX also comes available with a wide selection of accessories.

To view these and other products in use with video animation log on to our website at [www.qstraint.com](http://www.qstraint.com).

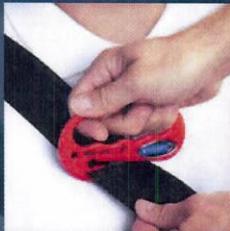
For a complete selection of our products we also offer our interactive electronic catalogue.



Cable Release



Storage Pouch



Belt Cutter

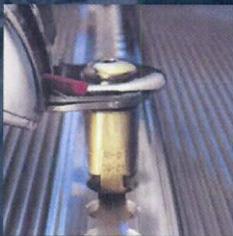


Webbing Loop

Our selection of accessories offer the operator more options to make the job easier.



Covered Floor Pocket



L-Track



Oval Pocket



A-Track



Slide N Click

We offer a wide selection of floor anchorages that compliment the QRT MAX.



Distributed by:

If you have any questions or comments about Q'Straint, please do not hesitate to contact us at the location near you:

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Log on to our website at [www.qstraint.com](http://www.qstraint.com)

We reserve the right to make changes without notice Q5-1187-QMAX, Rev01



# Optional Equipment Literature

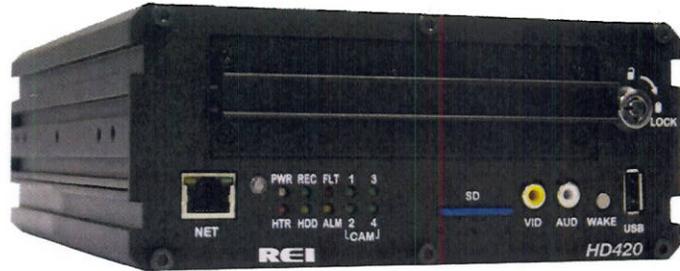


## Mobile Video Surveillance HD420 DVR

Part # 710422  
with WiFi Part # 710424

### Product Features

- Record up to 4 channels of audio/video - 120 fps at D1 resolution
- Easy-to-use HD Series viewing software
- H.264 advanced video compression
- Dual streaming Wi-Fi and 3G/4G compatible
- GPS compatible
- Removable hard drive module with USB port
- USB auto download
- Integral hard drive dampening
- Durable, extruded aluminum chassis
- Quiet, clean fanless design
- Optional lock box and security caps



Hard drive/SD card not included.

REI's mobile video surveillance system promotes increased safety and security for bus and transit systems. The new HD420 mobile DVR connects up to 4 surveillance cameras providing video coverage in and around your vehicle. REI is committed to providing a quality, durable product which is why the DVR includes an extruded aluminum chassis, fanless design and wireless capability. Specify REI today!

Power	8 to 30 VDC
Dimensions	Without brackets: 7.2" x 3" x 9"; With brackets: 9.2" x 3.4" x 9" (max)
Weight	8.0 lbs (3.63 kg) with mounting brackets
Operating Current	1 amp continuous/8 amps max (heater operating) @ 12 volts
Standby Current	< 100 milliamps @ 12 volts
Operation Temperature	-40°F to +150°F (-40°C to +65°C)
Operating Humidity	10% - 95%, non-condensing
<b>Video Recording</b>	
Video Inputs	4 channels
Video Standard	NTSC, 1 Vp-p standard, 75 Ohms termination
Resolution	D1 (720x480), 2 CIF (720x240), or CIF (352x240), selectable
Frame Rate	Up to 30 fps/channel (120 fps total at D1)
Compression	H.264 advanced video coding (9 quality settings)
Audio Inputs	4 channels
<b>Inputs/Outputs</b>	
	8 vehicle sensor, active high/low selectable inputs, panic/event marker button, differential speedometer pulse input, GPS, accelerometer, Ethernet (x2), USB 2.0, J1939, external record status indicator, video & audio output jacks
<b>Miscellaneous</b>	
Included with DVR	IR remote control; (2) "AAA" batteries; (2) mounting brackets with hardware; (2) hard drive module keys, bilingual warning stickers



## Mobile Video Surveillance DVR Specifications - HD420 and HD800



HD420



HD800

### Video Recording

- H.264 Main Profile video compression – better image and/or more record capacity than MPEG4
- 4 or 8 channels of video and audio (HD420 or HD800 respectively)
- One channel of audio per video channel (4 or 8 channels of audio)
- Selectable Resolution: CIF (352X240), 2CIF (720X240), or D1 (720X480) (3 settings)
- Selectable Frame Rate: 1,2,3,7.5,5,7.5,10,15,20,25,30 frames per second per channel
  - HD420 – D1 @ 30 fps on all 4 channels simultaneously: 120fps @ D1 total composite frame rate
  - HD800 - Full D1 (D1 @ 30 fps) on all 8 channels simultaneously: 240fps @ D1 total composite frame rate
- Selectable Quality: 1-9 (9 settings)
- Resolution, frame rate, and quality configurable independently for each channel
- Dual stream encoding – configurable low-bandwidth sub-stream for 3G/4G live viewing
- Predicted record time displayed in UI
- Automatic hard drive overwrite or write-once modes – user selectable
- Alarm event tagging for automatic/manual download and to provide fast access to alarm events during playback
- Alarm triggering based on panic button, input (brakes, stop arm, etc - up to 8 total), vehicle speed, acceleration (collision, hard braking, etc.), or J1939 data
- Alarm video protected from overwrite - protect for 0, 3, 7, 10, 15, 20, 30, 45, or 60 days, or continuously protected
- Increased frame rate on alarm occurrence: up to 30 frames per second
- Vehicle data, including inputs, speed, acceleration, and GPS coordinates stored continuously with video at all times – “black box” data recording functionality
- Time stamp, vehicle ID, camera names, and vehicle data permanently embedded in video data as metadata – no video permanently obscured by text, etc.
- Audio, video, and vehicle data stored fully synchronized in a proprietary tamper-resistant file format with no known editing method - assures integrity of video evidence and associated data

### USB

- USB automatic backup function
  - Automatic or manual backup of alarm video to USB storage device
  - Priority based automatic backup – high priority alarms copied first
  - Automatic removal of alarm protection on backup – user configurable
- USB firmware update and configuration
  - Automatic or manual firmware update from USB storage device
  - Configuration save and load from USB storage device

Radio Engineering Industries, Inc.

6534 L Street, Omaha, NE 68117

800.228.9275 | 402.339.2200 | Fax: 402.339.1704 | Service: 877.726.4617

[radioeng.com](http://radioeng.com)



#### Hard Drive Module

- Removable, locking hard disk drive (HDD) housing with 2.5 HDD with up to 1TB capacity options available (320GB, 500GB, 750GB and 1TB available)
- Shock and vibration dampening fully integrated into HDD housing
- Metal housing construction
- Integrated heater for operation down to -40°C
- USB 2.0 port on HDD housing for direct connection to a host PC – no docking station required
- Key-switch on HDD housing to lock USB port to prevent unauthorized access to the HDD contents and assure integrity of video evidence

#### Network

- Optional external 802.11b/g wireless bridge for lot-based video review and archiving
  - Access point or bridge(client) mode operation
  - Wake on LAN optional functionality
  - WEP, WPA, & WPA2 Encryption options
- Optional external 3G (Cell phone) wireless router for remote monitoring
  - Dual stream live view video and audio – full or reduced bandwidth stream for efficient 3G/4G operation
  - Web based vehicle tracking
  - Mobile wireless internet
- Built in Web UI – access remotely or locally with standard web browser (requires PC/laptop)
  - View live or recorded video (requires Internet Explorer)
  - Backup recorded video
  - Configure all DVR parameters
  - Firmware upgrade
- Remote viewing and backup of recorded video through **A.R.M.O.R.-VMS** playback application
- Automatic backup of recorded video through **A.R.M.O.R.-AutoPilot** automatic download system
- Email notification of alarm events (with optional Wi-Fi or 3G wireless router)
- Remote status and fault reporting

#### Power

- Fully regulated power supply for error free operation with varying input voltage – 8-30 Volt input range
- Fully protected against overvoltage, transients, and reverse-polarity
- Low-voltage cutoff with automatic restart
- Programmable off delay: 0 to 9 hours and 59 minutes
- DVR switched on/off automatically by vehicle ignition, schedule, or logical combination of both (user selectable)
- Seven day schedule with two adjustable ranges per day
- Low power mode for reduced power consumption during video archiving through a network – schedule or timer based
- 12-14 gauge pre-terminated power cable standard

#### Physical/Environmental

- Small form factor
- Wide operating temperature range design: -40° to +65°C.
- Fanless cooling design
- Industrial extruded aluminum chassis for cooling and vandal resistance
- All metal chassis construction
- Minimal chassis openings to prevent dust, moisture ingress
- All locking connectors to prevent disconnection due to shock, vibration, etc.

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- All cables attach directly to the DVR via locking connectors - no breakout cables and/or boxes required
- Wake button on front panel of DVR. Waking DVR does not affect recording.
- Flexible mounting options – DVR may be top (under-seat), bottom (floor), or vertically mounted using the included brackets
- DVR chassis may be hard mounted and requires no additional shock and vibration protection – hard drive module includes all shock and vibration dampening internally
- Optional 16 gauge steel lock box with key-lock and piano hinged door
- Optional removable rear end panel to protect the DVR cables from damage and/or intentional disconnection
- Optional removable front end panel to protect DVR face

### **Inputs and Outputs**

- Analog audio/video outputs on front panel for optional local configuration and video review
- 8 sensor inputs for connection to vehicle signals for data recording and alarm / event detection
  - Individually configurable sensor input names as well as common presets
  - Individually configurable as active high (switch positive) or active low (switched ground) in firmware
  - Individually configurable as marked events or protected alarms
- J1939 interface for connection to in-vehicle network
  - Record vehicle speed, brakes, etc. direct from vehicle network
  - Event detection and diagnostics from J1939 data – alarm/event detection of excessive vehicle idling, low tire pressure, etc. (custom function – will depend on make/model/options of vehicle)
- Analog speedometer input with user selectable sensitivity and calibration
  - Displays available in MPH or KM/H
  - Manual or automatic calibration
  - Configurable high and low speeds as marked events or protected alarms
- 4 or 8 camera inputs (HD420 or HD800 respectively) with coaxial video, coaxial audio, power and isolated ground on a single locking connector
- 2 Ethernet ports (2X RJ45 – 10/100 BaseT) on the front and back of the unit for expansion (Wi-Fi, 3G, etc.) and local configuration, video review, and archiving (optional)
- Optional Panic button to allow driver/user to easily tag events in the recorded video which includes an external record indicator to display system (recording) status to the driver/user
- Optional GPS module for continuous recording of vehicle location, heading, and speed, as well as configurable and automatic time and date synchronization
- Optional 3-axis 8G accelerometer/inertia sensor for data recording and detection of hard braking, accident detection, etc.
  - Each axis individually configurable for G force threshold
  - Each axis individually configurable as marked events or protected alarms
  - Calibration (zeroing) of unit after installation in vehicle
- Optional Drivers Display module for diagnostics display, data entry, and messaging
- Optional Output Module for connection to third party systems (AVL, etc.) for status and fault reporting, etc.

### **Diagnostics**

- Selectable audible or visual fault alerts
- Video loss detection for each camera
- Blind camera detection for each camera
- Detection of system and hard drive faults
- System fault indicator on front panel
- Video present indicators for each camera on the front panel
- Remote record status and fault indicator (with optional panic button/record indicator).

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- Status and fault reporting to third party systems (AVL, etc.) (optional output module).
- Recorded highest and lowest system temperature and voltages along with date and time of occurrence
- Display of current firmware versions and available hard disk drive space

#### Other Features

- Built in clock-calendar accurate to within +/- 4 minutes per year across the entire operating temperature range (-40° to +60°C)
  - Internal 10 year clock battery for accurate time in or out of the bus
  - Embedded time stamp recorded with video (as metadata – does not obscure video)
  - Selectable NTP or GPS time synchronization including time synchronization options and GMT offset
  - Customizable and automatic Daylight Saving Time adjustment
- Local playback and configuration with included remote control (requires monitor)
- Optional password for DVR configuration and access through local UI, Web UI, or **A.R.M.O.R.-VMS** application

#### Cameras

- Box, Dome, and Interior / Exterior wedge designs available
- Integrated IR illuminators (optional on dome) with intelligent IR illumination control
- Available with 2.8, 4, 6, 8, 12, and 16mm lenses (varies by model)
- Vandal resistant die-cast metal housings and polycarbonate domes/windows on all models
- IP68 rating on Exterior wedge designs
- Built in high quality microphone with level adjustment on all cameras (excluding exterior wedge)
- Single cable connection to DVR – video, audio, and power on a single, high quality, low loss, shielded cable with locking connectors
- Pre-terminated cables available in 6' to 60' lengths

SPC4016 05/13

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SELECT CNG AND PERFORMANCE, LLC (SCP) an Oklahoma based company founded-in 2014 by Jarod Watkins and Michael Woods focuses on quality service, installation of EPA Certified CNG Kits, LPG Kits, follow up lifetime agreements, and offers industry related accessories for private and public vehicles.

SCP is partners with Fuel Conversion solutions HQ, Inc. (FCS) located near Kansas City, Missouri.

Fuel Conversion Solutions HQ, Inc is located in Oak Grove Missouri, which has expanded to St Louis, Illinois and Gretna, Nebraska.  
[fuelconversionsolutions.com](http://fuelconversionsolutions.com)

**FCS**  
**Fuel Conversion Solutions**  
**ALTERNATIVE FUEL EXPERTS**

**EPA Certified Kits**



AGA Systems Inc.

IMPCO

NatGasCar

Landi Renzo USA

Altech Eco

American AlternativeFuels

**Propane Kits**



ICOM North America

IMPCO

Bi Phase Technologies

Roush

Technocarb

AAF

Clean Fuels USA

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 420 Main Drummond, Ok 73735



**SELECT CNG AND PERFORMANCE**

**Mission**

Provide the highest quality CNG/LPG conversions and quality vehicle accessories in Northwest Oklahoma. SCP will provide our clients allowing them the opportunity to burn clean fuel, achieve monetary savings while being good stewards of the local environment.

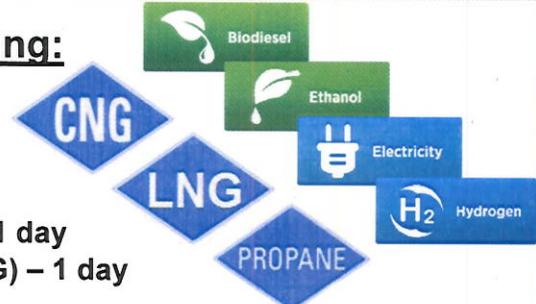
1. Quality delivery of product
2. Customer service
3. Competitive Prices
4. Leading edge technology

Facebook: SELECT CNG AND PERFORMANCE  
[selectcng.com](http://selectcng.com)

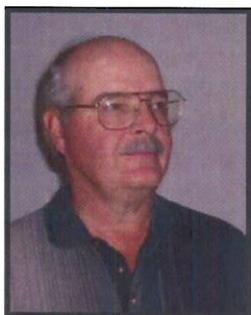


**Fuel Conversion Solutions' Training Offering:**

- NGV Fuel System Inspector – 2 days
- LD Natural Gas Safety – 3 days
- HD Natural Gas Safety – 3 days
- Propane Vehicle and Safety Training – 2-3 days
- Alt Fuels First Responder Trainings (all alt fuels) – 1 day
- First Responder Training- Gaseous Fuels (LPG/CNG) – 1 day



We can modify trainings to meet your stakeholder's needs. For example, we often package the classes together that have similar content: (LD/HD Natural Gas Safety + NGV Fuel System Inspector Training- 4 days).  
\*\*\*\*\*



**Instructor:** Nick Wagoner is the President of Fuel Conversion Solutions of Oak Grove, MO., specializing in CNG and LPG vehicle conversions, training and inspections. Wagoner currently provides specialized training for equipment manufacturers such as IMPCO and AGA. He was an alternatives fuel consultant and Automotive Technology instructor at Central Community College in Columbus, Neb., for 25 years and is a nationally recognized alternative fuels trainer by the NAFTC and the Environmental Protection Agency.

Wagoner has served as President of the Board of Directors and Curriculum Chairman for the NAFTC and also helped write the ASE F-1 test for natural gas. Wagoner's credentials include certifications as an ASE Master Mechanic, ASE Alternative Fuels, Certified by the State of OK, and CSA Certified Cylinder Inspector. He has been a natural gas trainer, inspector, and consultant for 20 years. Wagoner has provided trainings extensively throughout the United States and India at the request of the U.S. Department of Energy and the NAFTC.

Currently Nick and his son own and operate Fuel Conversion Solutions, llc based out of the Kansas City area. FCS has four conversion facilities in the Midwest, Oak Grove Missouri (headquarters), St. Louis Missouri, Drummond Oklahoma, and Gretna Nebraska. FCS provides vehicle conversions and inspections to customers in Missouri, Kansas, Nebraska, Iowa and Oklahoma, and provides CNG training across the United States. They are committed to providing cost-effective solutions that enable their customers to utilize clean, American fuels in their vehicles.

**For questions or to schedule a training, contact Aaron Brown:**  
[aaronb@fuelconversionsolutions.com](mailto:aaronb@fuelconversionsolutions.com), 913-912-3275.



## Select CNG & Performance, Fuel Conversion Solutions References and Clients

- **Reference: Oklahoma State University; Chris Hoffman, Fleet Manager**  
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Cell: (405) 747-0583
- **Reference: Department of Energy, Clean Cities; Kelly Gilbert, Transportation Director**  
**Kelly Gilbert, Transportation Director**  
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Kansas City, MO 64109  
E-Mail: [kgilbert@kcenergy.org](mailto:kgilbert@kcenergy.org)  
Office: (816) 561-1625  
Mobile: (816) 812-9772  
Fax: (816) 531-4846  
[www.kcenergy.org](http://www.kcenergy.org)
- We also have excellent working relationships with several city governments, counties, and private fleets as well as Ford, Chevy, and GM dealerships to which we provide conversions, technician training and service work. Some clients of Select CNG and Fuel Conversion Solutions include:
  - **Oklahoma State University**
  - **University of Nebraska**
  - **Pepsi Co**
  - **LKQ**
  - **Black Hills Energy**
  - **Department of Defense**
  - **DHL**
  - **Biford Auto Group**





## Ford E-450 Cutaway



### Available Trims

- E-450 Cutaway

### Dedicated CNG System

- CARB Certified in all 50 States
- EPA Certified

	E-450
Engine	6.8L 2-Valve V10
Manufacturer Stated Horsepower	305 horsepower 420 ft-lb torque
Max GVWR	14,500 lbs

Landi Renzo USA offers a complete solution to your alternative fuel needs with a dedicated CNG system for the Ford E-450 Cutaway with a 6.8L V10 engine. Landi Renzo offers full installation at its Torrance, CA headquarters or through our trained independent installer network.

### CNG System Components

- Engine Control Module (ECM) recalibration for CNG system
- CNG pressure regulator
- Coalescing high pressure filter
- CNG fuel injector rails
- Pressure transducer and fuel gauge module
- CNG tanks fitted with electronic shut-off valves
- Option of Type IV or Type III composite tanks
- All necessary valves, hoses, brackets, and fittings

### Service and Support

- 3 year or 50,000 mile warranty period
- 8 year or 80,000 mile warranty on emission related components
- Technical support



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✉ 310.257.9487

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FUEL Conversion Solutions, llc | 300 NW 2nd Street, Oak Grove, MO 64075 | 913-912-3275 | [www.fuelconversionsolutions.com](http://www.fuelconversionsolutions.com)

The industry leader in design,  
development and installation  
of alternative fuel solutions.

ISO 9001:2008



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[EPA / CARB Certificates](#)

[Company](#)

[Contact](#)

## E - 450

Dedicated CNG



Years Make – 2012-2014

Model – E-450

Engine 6.8L Gaseous Prepped

Fuel Type – CNG

Fuel Delivery – Dedicated

GGE Capacity – Varied

Tank Location – Customer Specified

## IMPCO Automotive

IMPCO Automotive is a Ford Gaseous Fuel QVM with Ship-Thru capability doe CNG and LPG conversion components that are designed and validated with proven engineering OEM expertise. The entire gaseous fuel system adheres to IMPCO Automotive's strict quality, durability, and safety testing requirements to ensure a superior and safe product to the end customer.

IMPCO Automotive offers compressed natural gas (CNG) fueling systems while also providing the only Ford QVM bi-fuel liquefied petroleum gas (LPG) system in the market today – eliminating any range anxiety. IMPCO Automotive's industry leading CNG and LPG fuel systems come with IMPCO Automotive's 36 month/36,000 mile limited warranty. Ford base warranty is also maintained for vehicles equipped with the gaseous fuels engine prep package.

## IMPCO Specifications

- Fuel systems installed only on Ford's Gaseous Prepped Ready Engines
- Designed and Validated using IMPCO Automotive Engineering's OEM Expertise
- Follow OEM installation guidelines for clipping, securing, and minimizing clearances for harness and fuel lines.
- Fasteners Coated to Exceed 10 Year Cyclic
- Corrosion Testing
- Work performed and validated in a ISO 9001:2008 certified manufacturing facility
- Dyno tested following complete installation of fuel system
- Certification and Compliance – Fuel systems are designed to meet both EPA and CARB standards.

\*For additional tank configurations and GGE's contact your local certified Installer

By utilizing a Ford Gaseous QVM installer you can have your system financed using Ford Motor Credit. Ask you're your dealer for details.

### IMPCO Automotive News

- [Press Release: IMPCO Automotive's MY2015 CARB and EPA Certified Bi-Fuel CNG Trucks Hitting the Streets](#)
- [IMPCO's Bi-Fuel Trucks Hit the Streets](#)
- [THOMAS BUILT BUSES SETS START OF PRODUCTION ON COMPRESSED NATURAL GAS-FUELED MINITOUR](#)

### Upcoming Shows

2014 ACT "Alternative Clean Transportation" Expo  
Long Beach, CA

**September 15-17**

BusCon  
Indianapolis, Indiana

**October 13-15**

APTA - American Public Transport Association  
Houston, TX

**October 29-30**

Green Fleet Conference  
Schaumburg, IL

### Certified Installers



ALTERNATIVE FUEL EXPERTS  
81 6-443-298 4

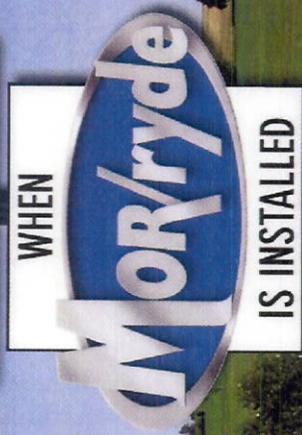
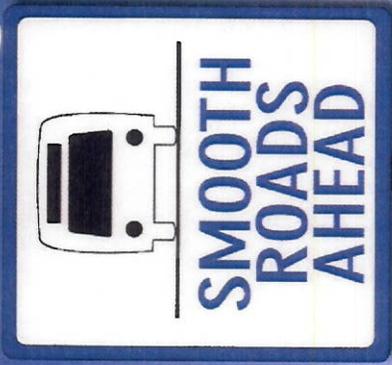
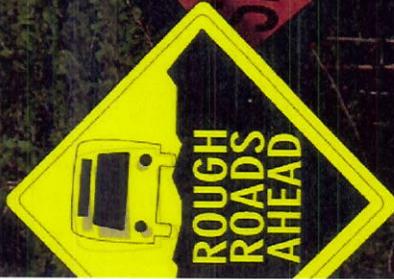
[Frequently Asked Questions](#)

[EPA / CARB Certificates](#)

[News](#)

[Contact Us](#)





**BECAUSE YOUR BUS DOESN'T  
HAVE TO RIDE LIKE A TRUCK!**

## SMOOTHING OUT THE ROUGH SPOTS

"MOR/ryde really solved a problem for us. Previously we were faced with an expensive upgrade to improve the ride. MOR/ryde's system is less costly, easy to install and requires minimal maintenance."

- R. Streiff / Senior Analyst, Access Services



**RUBBER SHEAR SPRINGS ISOLATE AND ABSORB ROAD SHOCK TO PROVIDE A SOFTER, MORE COMFORTABLE RIDE FOR ALL OF YOUR PASSENGERS.**



**BETTER PROTECTION FOR THE VEHICLE FROM DAMAGING ROAD SHOCK.**

**EASILY ADJUSTABLE TO ACCOUNT FOR WHEEL CHAIR LIFT.**

**ALSO AVAILABLE ON TRUCKS, AMBULANCES, AND MOTOR HOMES.**



[WWW.MORRYDE.COM](http://WWW.MORRYDE.COM)

## TODAY'S ROADS ARE ROUGHER THAN EVER

That is why today's leading providers of Shuttle and Para-transit services rely on MOR/ryde Suspensions Systems for improved passenger comfort and better protection of their vehicles from the damaging effects of road shock.

At the heart of every MOR/ryde suspension system are unique rubber shear springs. The MOR/ryde suspension works in concert with the existing leaf spring suspension system to provide your riders a softer, smoother, more comfortable ride. Whether it is chuck holes, dirt roads, or railroad tracks you encounter, rubber has a natural tendency to isolate and absorb road shock. So rather than road conditions beating up your bus and your riders, the blows are absorbed by the MOR/ryde suspension system.

The MOR/ryde system can be ordered on new buses from the manufacturer or installed aftermarket on buses equipped with leaf springs in a very cost effective manner. Each system comes with a 3 year/ 70,000 mile warranty and requires minimal maintenance to sustain optimal performance.



MORRYDE INTERNATIONAL, INC. 1966 MOYER AVE., ELKHART, IN 46516 (574) 293-1581

The logo for SPX, with 'SP' in dark blue and 'X' in green, followed by a registered trademark symbol.

**SPX**®

A green chevron icon pointing to the right.

**> Where Ideas Meet Industry**

# CENTSaBILL

## ELECTRONIC REGISTERING FAREBOX



The GFI CENTSaBILL Electronic Registering Farebox relies on performance-valued engineering and user-focused design to deliver the security, accuracy and reliability that have made it the best-selling farebox in North America.

The CENTSaBILL assures rapid fare collection and driver verification. Choose any combination of fare media: coins, dollar bills, tokens, tickets, and magnetically encoded documents. The farebox instantly records fare and passenger data. Collected fares are securely protected during passenger deposit through removal and transfer to your counting room. The CENTSaBILL makes sense.

**GFI GENFARE**

AN SPX DIVISION



## FEATURES

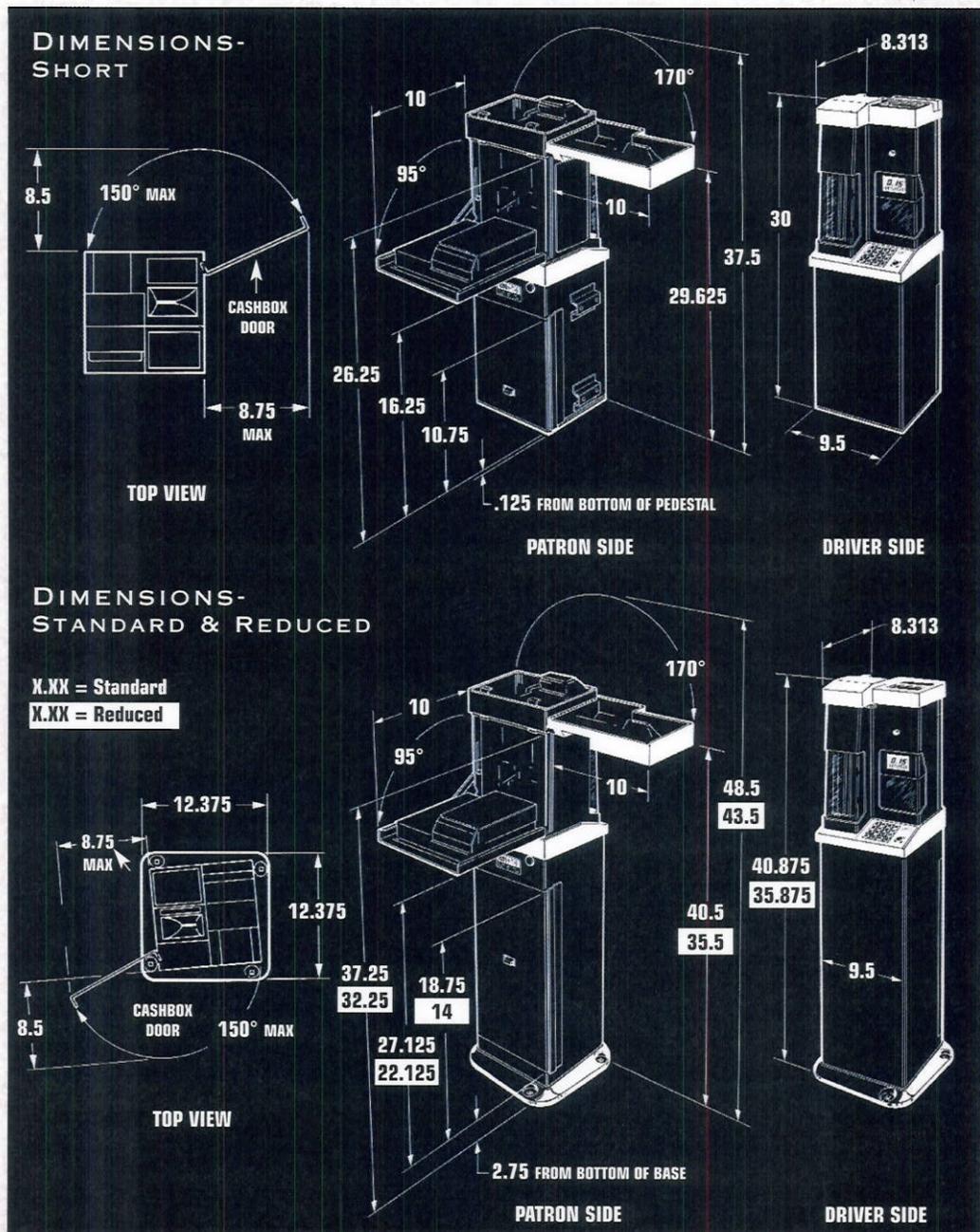
- Large, easy-to-read 4-digit driver's display helps the driver determine that correct fares have been deposited into the farebox.
- Flexible reporting structure allows for the generation, storage, and reporting of data on multiple passenger classifications and other farebox operations.
- Interlinked cashbox, receiver, and vault equipment ensure secure, rapid, and easy transfer of collected revenue from the farebox to the vault.

## OPTIONS

- Dollar Bill Accelerator (DBA)
- Magnetic swipe pass reader
- Electronic cashbox door lock
- Electronic cashbox identification
- Passenger display (3 digits)
- Remote driver control keypad/display
- Driver Control Unit (DCU)
- Integration with passenger processing
- Ticket Reader/Issue Machine (TRiM)
- Silent Alarm
- Floor mount or stanchion pole ( on 30" model only)
- Smart Card Reader

## SIZES AVAILABLE

Choice of 3 farebox heights (41", 36", 30")



## SPECIFICATIONS

### OPERATIONS

#### Fare Acceptance

Coins . . . . . U.S. 1¢, 5¢, 10¢, 25¢, 50¢, SBA and Sacagawea (gold) \$1 coins programmable for foreign coins

Tokens (standard) . . . . . 5 sizes: .650", .800", .900", 1.0", 1.125"

Tickets (non-magnetic) 7 sizes: 2" x 2" up to 2" x 5"

Bills . . . . . One dollar bills

Coin validation insertion rate . . . . . 10 coins per sec.

No. of coins/tokens coin mech. distinguishes . . 12

Programmable fare tables . 10

Dualport cashbox . . . . . separates bills & coins

#### Fare Registration Accuracy

Within . . . . . +/- 1/2¢ per \$300

#### Driver Keypad

16 pushbuttons . . . . . 1-0 keys, \*,# plus keys A-D

Dump button . . . . . releases fares from viewing area

Optional Driver Control Unit (DCU) . . . . . 27 buttons

#### Fare Data Reporting Functions

Route/Run segmenter . . . . organizes passenger & revenue information

Data System . . . . . reports on fare data (records data manually & automatically)

Memory . . . . . standard 256 KB (nonvolatile) memory registers and stores fare data with optional expansion to 1 meg

#### Electrical Power Volts DC Range

Standard . . . . . 12 11 to 15VDC

Optional . . . . . 24 22 TO 29VDC

Max. current draw . . . . . 8 amps peak (in operation)  
0.8 amps (idle)@12 volts

Power consumption . . . . . 96 watts peak, 28 watts typical

### MECHANICAL

	Cashbox (Fare Storage)		
	Standard	Reduced	Short
Useful interior volume	730 cu. in.	500 cu. in.	300 cu. in.
Capacity in mixed coins	\$700	\$500	\$300
Capacity without bill accelerator	\$600	\$400	\$75
Capacity with bill accelerator	\$800	\$600	\$150
Empty weight	17 lbs.	15 lbs.	13 lbs.

### Construction

Upper & lower cabinet . . . 14-gauge, stainless steel, satin finish

Top, Center & Base . . . . . epoxy-coated cast aluminum

### Security

Design . . . . . vandal-resistant

High-security locks . . . . . pick-resistant/multi-tumbler magnetic

Driver log on . . . . . farebox disabled before log on

Cashbox alarms . . . . . recorded by Data System

### Driver Display

Numeric Display (revenue) 4 digits, LED

Alphanumeric Display . . . . . 8 digits, dot matrix

Digit height . . . . . LED - 9/16"  
- 3/16"

Message . . . . . Upper - cash inserted/balance  
Lower - driver information

### Optional Passenger Display

Numeric Display . . . . . 3 digits, dot matrix

Digit height . . . . . 1/4"

Message . . . . . revenue amount

### Optional Magnetic Card Reader

Accepts cards . . . . . up to (.030") thick

Processing time . . . . . less than 1/2 sec.

Accuracy . . . . . better than 99.0%

### Optional Electronic Lock - Cashbox Access Door

Data Probe . . . . . sends security code to farebox to unlock cashbox access door

Cashbox ID . . . . . cashbox serial # identification

### Environmental

Operating Temperature . . . +0°F to +110°F  
-20°C to +43°C

Storage Temperature . . . . -25°F to +140°F  
-30°C to +60°C

Thermal Shock . . . . . 1° per minute drop in temp. over 15°F range between 110° and 60°

Relative Humidity Range . . 13% to 95% R.H. NC

Vibration . . . . . 0.3g(rms), 5 to 200 Hz

Shock . . . . . Up to 5g (instantaneous)

Inclination . . . . . 0° to 10° off vertical unsustained

### Electromagnetic

Interference . . . . . Immune to 400V spikes of up to 5 microseconds duration across incoming power supply lines

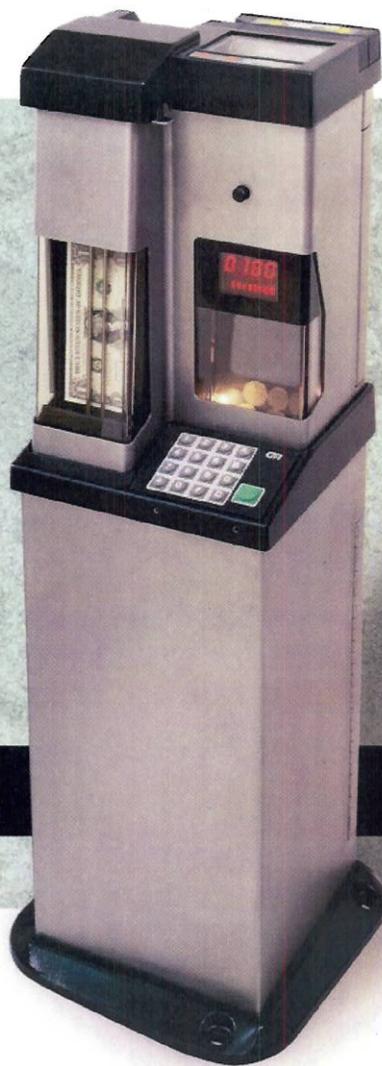
### QA Testing

Each farebox is subject to numerous in-house mechanical, electronic, and environmental tests during production and burn-in.

Manufactured in an ISO9001-certified facility.

Specifications subject to change.





**CENTSaBILL**  
ELECTRONIC REGISTERING FAREBOX

It takes approximately 2 seconds to complete a fare transaction using the CENTSaBILL Farebox.

The design makes it easy for passengers to deposit fares. The controls and data displays are designed for rapid learning and easy use by the operator – benefits that are especially important during peak operating hours. The 16-button keypad allows the driver to efficiently record all special fares. CENTSaBILL's route/run segmenter provides additional data reporting capabilities as well as a complete breakdown of passenger and revenue information. Our optional transactional database allows complete data storage on the farebox logic board and easy transfer to the expanded GFI Data System garage computer.

The CENTSaBILL high-security cashbox separates coins and bills. Separation is maintained until the contents of the locked cashbox are transferred to your counting room or bank. The cashbox automatically locks when it's removed from the farebox. It may be tracked using an optional tamper-proof electronic identification number.

**CENTSaBILL ELECTRONIC REGISTERING FAREBOX**  
OPTIONAL FEATURES:

- Electronic lock for keyless secure access to cashbox
- Electronic cashbox serial number identification
- Built-in illuminated magnetic pass reader
- Choice of heights: 41", 36" or 30"
- Ticket Reader/Issue Machine (TRiM)
- Passenger Display
- Dollar bill accelerator
- Driver Control Unit (DCU)
- Smart Card Reader

Like all GFI equipment, CENTSaBILL is engineered for maximum durability with minimum maintenance. Modular construction simplifies repair and permits easy, cost-efficient upgrading regardless of when the unit was purchased. This allows your investment to continue to pay dividends long after lesser equipment becomes obsolete. GFI Genfare products are engineered to perform both as stand-alone units and as part of fully integrated systems.



751 Pratt Blvd., Elk Grove Village, IL 60007  
Tel: (847) 593-8855 Fax: (847) 593-1824  
E-mail: GFI.Sales@spx.com  
Website: www.gfigenfare.com

The SPX logo features the letters 'SPX' in a bold, sans-serif font. The 'S' and 'P' are dark blue, while the 'X' is green. A registered trademark symbol (®) is located to the right of the 'X'.

**SPX**®

Global Headquarters  
13515 Ballantyne Corporate Place  
Charlotte, North Carolina 28277  
United States

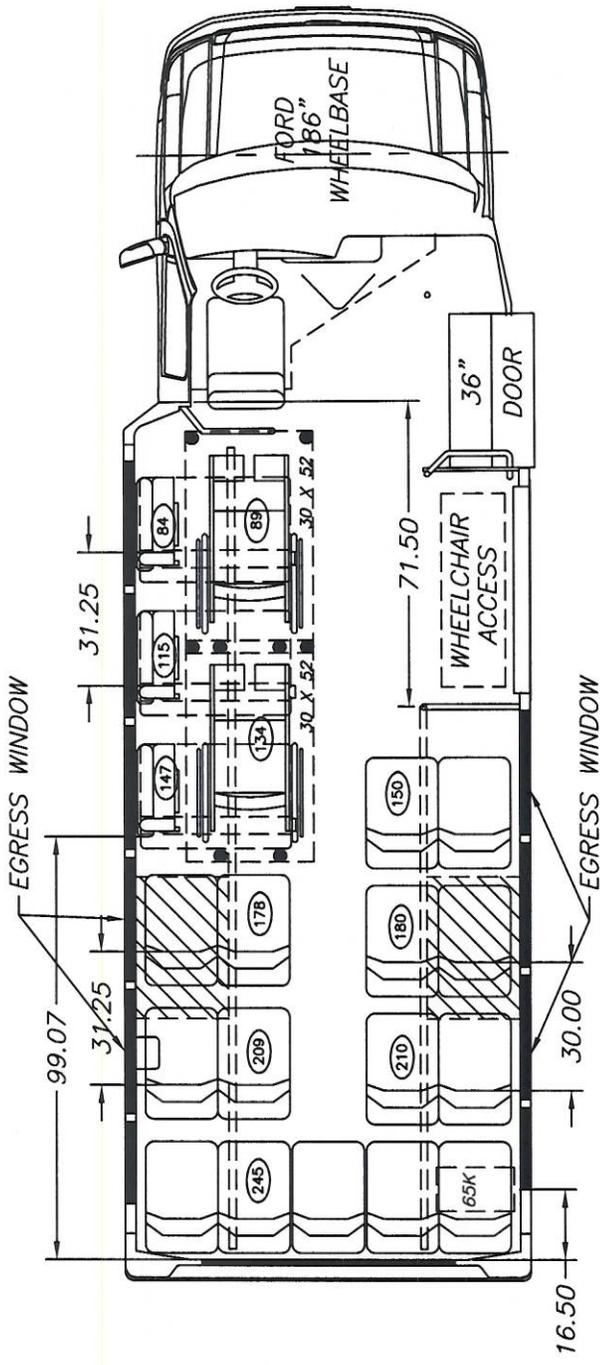
**Where Ideas Meet Industry**

● **Where Ideas Meet Industry**

[www.spx.com](http://www.spx.com)

**DOOR DELETE**  
**FLOORPLAN**

LEGEND  
 (85) = C/L FRONT AXLE TO PASS C.G.



**Eldorado National**  
 1655 WALL STREET  
 SALINA, KS. 67401

TITLE:  
 AEROTECH 240  
 36" ENTRY DOOR / WC DOOR (FRONT)

UNIT NUMBER  
 ATF2408-DH34

PAGE  
 1 of 1

DO NOT SCALE DRAWING	DRAWING INFORMATION	REV.	BY	DATE	RELEASE TO PRODUCTION	DESCRIPTION
THIS DRAWING IS THE PROPERTY OF EL Dorado NATIONAL COMPANY, A THOR INDUSTRIES COMPANY AND IS, NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.	DRAWN: MILLER OKD: DATE: 5/19/14 SCALE: 1/42 SIZE: A WGT:					
TOLERANCE UNLESS SPECIFIED						
SEAT SPACING ± 1.0 (SEAT SPACING NOT TO BE LESS THAN 28.5")						
RESTRAINTS ± 1.0 (W/C POSITIONS NOT TO BE SMALLER THAN 30 X 48)						

# SECTION II

**SPECIAL PROVISIONS FOR THE PROCUREMENT OF CAPITAL EQUIPMENT  
USING FEDERAL FUNDS**

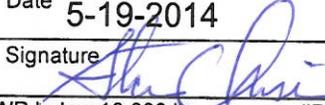
**THE FOLLOWING REQUIREMENTS AND CONDITIONS ARE INCLUDED AS AN  
ESSENTIAL PART OF THE SPECIFICATIONS ATTACHED HERETO.**

**SECTION I. FOR ALL BIDS:**

**FMVSS CERTIFICATION - 49 CFR 571 Part D  
(Circle all applicable standard #s)**

#	Title	#	Title
101	#*Controls and Displays	102	#*Transmission shift lever sequence, starter, interlock, transmission braking effect
103	#*Windshield defrost and defogging system	104	#*Windshield wiping and washing system.
105	#*Hydraulic brake system.	106	#*Brake hoses
107	#*Reflecting surfaces	108	#*Lamps, reflective devices, and assoc. equip.
109	#New pneumatic tires	110	#Tire selection and rims.
111	#*Rearview mirrors	112	#*Headlamps concealment devices.
113	#*Hood latch system	114	#Theft Protection (not for walk-in vans)
115	#*VIN -basic requirements.	116	#*Motor vehicle brake fluids.
117	#Re-treaded pneumatic tires (to be used on rear wheels only)	118	#Power-operated window, partition, roof panel system (GVWR < 10K)
119	*New pneumatic tires for vehicles other than passenger cars	120	*Tire selection & rims for vehicles other than passenger cars
121	*Air brake system	124	#*Accelerator control system.
129	#New non-pneumatic tires for passenger cars.	201	#@Occupant protection in interior impact
202	#@Head restraints	203	#@Impact protect, driver steering control system
204	#*Steering control rearward displace (not walk-in vans)	205	#*Glazing materials
206	#Doors, locks, and door retention components.	207	#*Seating system
208	#*Occupant crash protection	209	#*Seat belt assemblies.
210	#@Seat belt assembly anchorages.	211	#Wheels, nuts, wheel discs, and hub caps
212	#@Windshield mounting	213	#*Child restraint system.
214	#@Side impact protection (not walk-in vans)	217	*Bus emergency. exits / window retention & release
219	#@Windshield zone intrusion	220	*School Bus rollover protection
301	#@Fuel system integrity (+School Bus >10K GVWR)	302	#*Flammability of interior materials.

The undersigned **BIDDER/VENDOR** hereby certifies that all vehicles furnished meet the **FMVSS IAW 49 CFR 571**.

Name of Company	<b>Alliance Bus Group, Inc</b>	Date	<b>5-19-2014</b>
Printed Name of Person Signing Form	<b>Stan Chisum</b>	Signature	

\*Bus

@Bus with GVWR below 10,000 lbs.

#Passenger Car



**EIDorado  
National - Kansas**  
Thor Industries Commercial Bus Division

**FMVSS CERTIFICATION**

EIDorado National (Kansas), Inc., as a final-stage manufacturer of incomplete motor vehicles, hereby certifies that EIDorado National buses are manufactured in compliance with all Federal Motor Vehicle Safety Standards (FMVSS) as required in Parts 567 and 568 of Title 49, Code of Federal Regulations.

Part 568 of Title 49, Code of Federal Regulations requires the incomplete vehicle manufacturer to specify the Gross Vehicle Weight Rating (GVWR) of the total.

The above regulations require, among other things, that each complete motor vehicle have a permanently affixed label certifying that such vehicle conformed with all applicable FMVSS on the stated date of manufacture.

All vehicles completed by EIDorado National Co. have affixed the required certification labels when the vehicle leaves the assembly plant. This certification label on a completed vehicle specifies the Gross Vehicle Weight Rating (GVWR) of the total vehicle as required.

  
\_\_\_\_\_  
Signed, EIDorado National (Kansas), Inc.

May 13, 2014  
\_\_\_\_\_  
Date

President  
\_\_\_\_\_  
Title

**EIDorado**  
**National - Kansas**  
Thor Industries Commercial Bus Division

**FMVSS**  
**APPROVALS AND CERTIFICATIONS**

The following is a listing of various safety requirements, testing, and general performance data pertaining to EIDorado National (Kansas), Inc. products and related components.

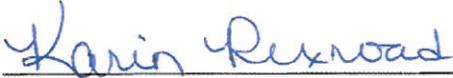
From Title 49, Code of Federal Regulations, Section 571, the following is a listing of the Federal Motor Vehicle Safety Standards (FMVSS) which all EIDorado National (Kansas), Inc. products either meet or exceed:

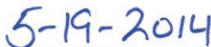
<b><u>FMVSS NO.</u></b>	<b><u>DESCRIPTION</u></b>
<b>100</b>	<b>SERIES - ACCIDENT PREVENTION</b>
101	Controls Location & Identification
102	Transmission Shift Lever Sequence
103	Windshield Defrosting & Defogging
104	Windshield Wiping & Washing System
105	Hydraulic Brake System
106	Brake Hoses
107	Reflecting Surfaces
108	Lights and Reflectors
111	Rear View Mirrors
113	Hood Latch System
114	Theft Protection
115	Vehicle Identification Number
116	Hydraulic Brake Fluids
119	New Pneumatic Tires
120	Tire Selection & Wheels for Buses
124	Accelerator Control Systems

**APPROVALS AND CERTIFICATIONS**  
**Page Two**

- 200                    SERIES - INJURY PREVENTION**
- 201                    Occupant Protection in Interior Impacts
  - 203                    Steering Wheel Impact Protection
  - 204                    Steering System Rearward Movement
  - 205                    Glazing Materials (window glass)
  - 206                    Door Lock & Door Retention Components
  - 207                    Anchorage of Seats
  - 208                    Occupant Restraints
  - 209                    Seat Belt Assemblies
  - 210                    Seat Belt Assembly Anchorages
  - 211                    Wheel Nuts, Wheel Discs and Hub Caps
  - 212                    Windshield Mounting
  - 217                    Bus Window Strength & Emergency Release
  - 219                    Windshield Zone Intrusion
  - 220                    School Bus Rollover Protection \*
  - 221                    School Bus Body Joint Strength \*
- 300                    SERIES - POST ACCIDENT PROTECTION**
- 301                    Fuel System Integrity
  - 302                    Flammability of Interior Materials
- 400                    SERIES - OBJECTIVE SAFETY REQUIREMENTS**
- 403                    Platform Lift Systems for Motor Vehicles
  - 404                    Platform Lift Installations in Motor Vehicles

\*Not required. However, all EIDorado National (Kansas), Inc. products have been tested and meet or exceed.

  
\_\_\_\_\_  
Karin Rexroad  
Transit Sales Administrator  
EIDorado National (Kansas), Inc.

  
\_\_\_\_\_  
Date



In submitting this bid, the undersigned **BIDDER/VENDOR** as noted in Section III - Certification to Purchaser, certifies and agrees to the following clauses, assurances and certifications.

The **BIDDER/VENDOR** agrees to include these requirements in subcontracts financed in whole or in part by Federal Transit Administration funding. The bidder/vendor must execute all certifications below.

**A. INCORPORATION of FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS:** The following 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 **BIDDER/VENDOR** shall not perform any act, fail to perform any act, or refuse to comply with any **PURCHASER'S** requests which would cause the **PURCHASER** to be in violation of the FTA terms and conditions

**B. FEDERAL CHANGES:** **BIDDER/VENDOR** 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 the **PURCHASER** and FTA, as they may be amended or promulgated from time to time during the term of this contract **BIDDER/VENDOR'S** failure to so comply shall constitute a material breach in this contract.

**C. DBE CERTIFICATION:** The **BIDDER/VENDOR** complies with 49 CFR 26.49 regarding the transit vehicle manufacturer=s overall DBE goal.

**D. AIR CONDITIONING PERFORMANCE:** The **BIDDER/VENDOR** will provide vehicles that meet or exceed the performance requirements of the air conditioning system(s) as detailed in the specification.

**E. INTEREST of MEMBERS of or DELEGATES to CONGRESS:** The **BIDDER/VENDOR** certifies that no member of or delegate to the Congress of the United States shall be admitted to any share or part of this contract or to any benefit arising there from.

**F. PROHIBITED INTEREST:** The **BIDDER/VENDOR** certifies that no member, officer, or employee of the Public Body or of a local public body during his or her tenure or one year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof.

**G. CARGO PREFERENCE - USE of UNITED STATES-FLAG VESSELS:** The **BIDDER/VENDOR** 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 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.)

H. **ENERGY CONSERVATION:** The **BIDDER/VENDOR** 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.

I. **CLEAN WATER & AIR:** The **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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.

J. **NO OBLIGATION by the FEDERAL GOVERNMENT:** The **PURCHASER** and **BIDDER/VENDOR** 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, BIDDER/VENDOR,** or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

K. **PROGRAM FRAUD and FALSE or FRAUDULENT STATEMENTS or REALTED ACTS:** The **BIDDER/VENDOR** 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. The **BIDDER/VENDOR** 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 resultant contract or the FTA assisted project for which this work is being performed. The **BIDDER/VENDOR** 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 **BIDDER/VENDOR** to the extent the Federal Government deems appropriate. The **BIDDER/VENDOR** 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 **BIDDER/VENDOR,** to the extent the Federal Government deems appropriate.

L. **CONTRACT WORK HOURS:**

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

2. **Violation; liability for unpaid wages; liquidated damages:** In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefore shall be liable for unpaid wages. 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 **PURCHASER** 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 include the clauses set forth in this section and require the same from 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 these clauses.

**5. Payrolls and basic records:** (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

#### **M. CIVIL RIGHTS:**

**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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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:

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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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 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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the **BIDDER/VENDOR** 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 **BIDDER/VENDOR** 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 **BIDDER/VENDOR** agrees to comply with any implementing requirements FTA may issue.

**N. ALTOONA TEST CERTIFICATION: (Check one of the following):**

- The vehicle has been Altoona tested, report number: PTI-BT-R2014-13-00-P
- The vehicle is exempt from testing in accordance with 49 CFR 665
- The vehicle is currently being tested at Altoona

**O. DEBARMENT AND SUSPENSIONS:** This contract is a covered transaction for purposes of 2 CFR Part 1200, which adopts and supplements the provisions of U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 CFR Part 180. As such, the contractor is required to verify that none of the contractor, its principals, as defined at 2 CFR 180.995, or affiliates, as defined at 2 CFR 180.905, are excluded or disqualified as defined at 2 CFR 180.940, 180.935 and 180.945.

The **BIDDER/VENDOR** is required to comply with 2 CFR 180, Subpart C and must include the requirement to comply with 2 CFR 180, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the **BIDDER/VENDOR** or proposer certifies as follows:

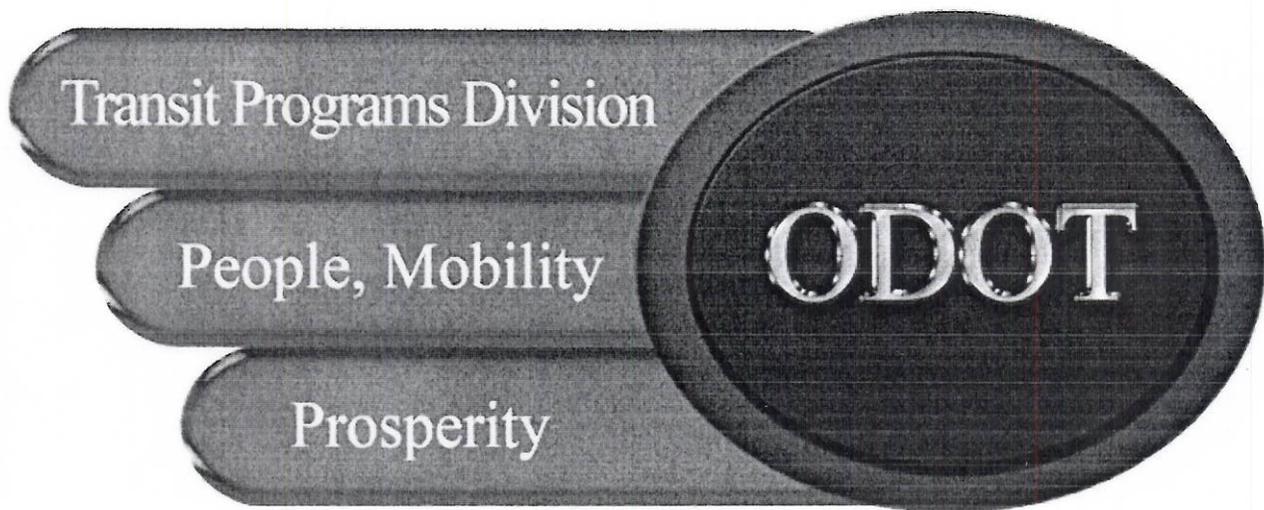
The certification in this clause is a material representation of fact relied upon by the **Procuring Agency**. If it is later determined that the **BIDDER/VENDOR** or proposer knowingly rendered an erroneous certification, in addition to remedies available to **Procuring Agency**, the Federal Government may pursue available remedies, including but not limited to suspension and/or

debarment. The bidder or proposer agrees to comply with the requirements of 2 CFR 180, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The **BIDDER/VENDOR** or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

The Procuring Agency agrees and assures that its third party contractors and lessees will review the "Excluded Parties Listing System" at <http://epls.gov/> before entering into any subagreement, lease or third party contract.

The Procuring Agency will be reviewing all third party contractors under the Excluded Parties Listing System at <http://epls.gov/> before entering into any contracts.

**FEDERAL FUNDS WILL NOT BE RELEASED UNTIL THE PURCHASING AGENCY RECEIVES A COPY OF THE ALTOONA TEST REPORT IF REQUIRED IN ACCORDANCE WITH 49 CFR 665**





**SECTION II**

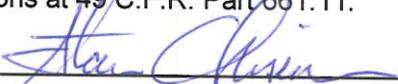
**A. BUY AMERICA CERTIFICATION:**

**BIDDER/VENDOR** to complete the Buy America Certification listed below. **BIDDER/VENDOR** shall certify **EITHER COMPLIANCE OR NON-COMPLIANCE** (not both).

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/vendor or offer or hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Signature 

Company Name Alliance Bus Group Inc

Title General Manager

Date 5-19-2014

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

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

Signature \_\_\_\_\_

Company Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

**Instructions:**

**Special Note: Make sure you have signed only one of the above statements -- either Compliance OR Non-Compliance (not both).**

Subscribed and sworn to before me this 19 day of May 2014.

  
Notary Public

November 22, 2017  
Commission Expiration Date

12963488-6  
My Commission Number

Seal:



**This form MUST be prepared and signed by the offeror/vendor and submitted with all bids or offers on FTA-funded contracts. Bids or offers not accompanied by this form will be REJECTED**

**B. DOMESTIC CONTENT WORKSHEET:**

(Typical Components of Buses from Appendix B to 49 CFR Sec. 661.11, an itemized component listing from the **manufacturer** that verifies compliance with the Buy America Provisions may be submitted in lieu of this form)

**If you plan on using another components listing, you must include it with your bid and place an X in the following box.**

I. Components	% Domestic	X % Value	Dom. Value
engines			
transmissions			
front axle assemblies			
rear axle assemblies			
drive shaft assemblies			
front suspension assemblies			
rear suspension assemblies			
air compressor and pneumatic systems			
generator, alternator & electrical systems			
steering system assemblies			
front and rear air brake assemblies			
air conditioning compressor assemblies			
air conditioning evaporator/condenser assemblies			
heating systems.			
passenger seats			
driver's seat assemblies			
window assemblies			
entrance and exit door assemblies			
door control systems			
destination sign assemblies			
interior lighting assemblies			
front and rear end cap assemblies			
front and rear bumper assemblies			
specialty steel (structural steel tubing etc.) and aluminum extrusions			
aluminum, steel or fiberglass exterior panels and interior trim			
flooring and floor coverings			
<b>TOTAL DOMESTIC CONTENT OF COMPONENTS (%)</b>			

**B. CONTINUED DOMESTIC CONTENT WORKSHEET:**

<b>II. Construction Activities</b> (Describe Activities)	
Location of Construction Activities:	% OF DOMESTIC CONSTRUCTION ACTIVITIES:

<b>Vehicle Manufacturer</b>	<b>Model</b>	<b>Model Year</b>
ELDORADO NATIONAL	AMERIVAN PT	2015
<b>Vendor Name</b> ALLIANCE BUS GROUP, INC	<b>Signature</b> <i>Alan Chisum</i>	<b>Date</b> 5-19-2014



**BIDDER'S CERTIFICATION  
BUY AMERICA  
PRE - AWARD AUDIT  
ELDORADO NATIONAL AEROTECH 240  
FOR  
OKLAHOMA 20 PASSENGER**

Pursuant to 49 CFR Part 661, no funds shall be obligated under Federal Mass Transit Act of 1964, as amended or the Surface Transportation Assistance Act of 1982, as amended, unless steel and a manufactured product used in such products are produced in the United States.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENTAGE OF TOTAL VEHICLE COST
*Chassis	Ford Motor Co.	US	42.4196%
*Base Body	EIDorado National	US	20.4484%
*Alternator	N/A		0.0000%
and electronic systems			0.0000%
Fast Idle	Intermotive	US	0.5946%
Engine Shut-Down	N/A		0.0000%
Battery System	N/A		0.0000%
*Air conditioning			0.0000%
compressor assemblies	Ford Motor Co.	INCL'D. IN CHASSIS PRICE	0.0000%
*Air conditioning			0.0000%
evaporator/condenser			0.0000%
assemblies	N/A		0.0000%
*Heating systems	ProAir, LLC	US	0.5293%
*Passenger seats	Freedman Seating	US	4.5248%
*Flip Seats	Freedman Seating	US	2.1754%
*Driver's seat assemblies	Ford Motor Co.	US	0.2900%
*Entrance Door			0.0000%
assemblies	EIDorado National	US	0.1450%
Lift Door	EIDorado National	US	0.9427%
Exit Door	N/A		0.0000%
*Door control assemblies	A & M Systems	US	0.7904%
*Front and rear bumper	Ford Motor Co.	INCL'D. IN CHASSIS PRICE	0.0000%
assemblies	Romeo Rim	US	0.7179%
*Lift Assembly	The Braun Corporation	US	4.9308%
*Restraints	Q'Straint	US	1.6823%
*Roof hatch	N/A		0.0000%
*Back-up System	N/A		0.0000%
*Suspension	N/A		0.0000%
*Farebox	N/A		0.0000%
*Break Retarder	N/A		0.0000%
	<b>TOTAL</b>		<b>80.1911%</b>

The following is a description of the actual location of the final assembly point including a description of the activities that will take place at the final assembly point and the cost of final assembly:

The actual location of the final assembly point shall be: 1655 Wall Street, Salina, KS 67401

Description and activities are as follows:

Cab-chassis is modified to receive the vehicle body  
Brake Retarder Installed  
Steel sub-frame is fabricated and attached to chassis  
Flooring is installed on the sub-frame  
Body is attached to chassis sub-frame and floor  
Windows are installed  
Doors are installed  
Electrical wiring harness is installed  
Interior paneling and equipment finished out  
Air conditioning installed  
Lift installed and tested  
Seats installed  
Tie-downs installed  
Final finish functions performed:

Exterior paint and markings applied  
Quality control and final testing performed  
Vehicle readied for shipment

**COST OF FINAL ASSEMBLY**

**\$13,659.00**

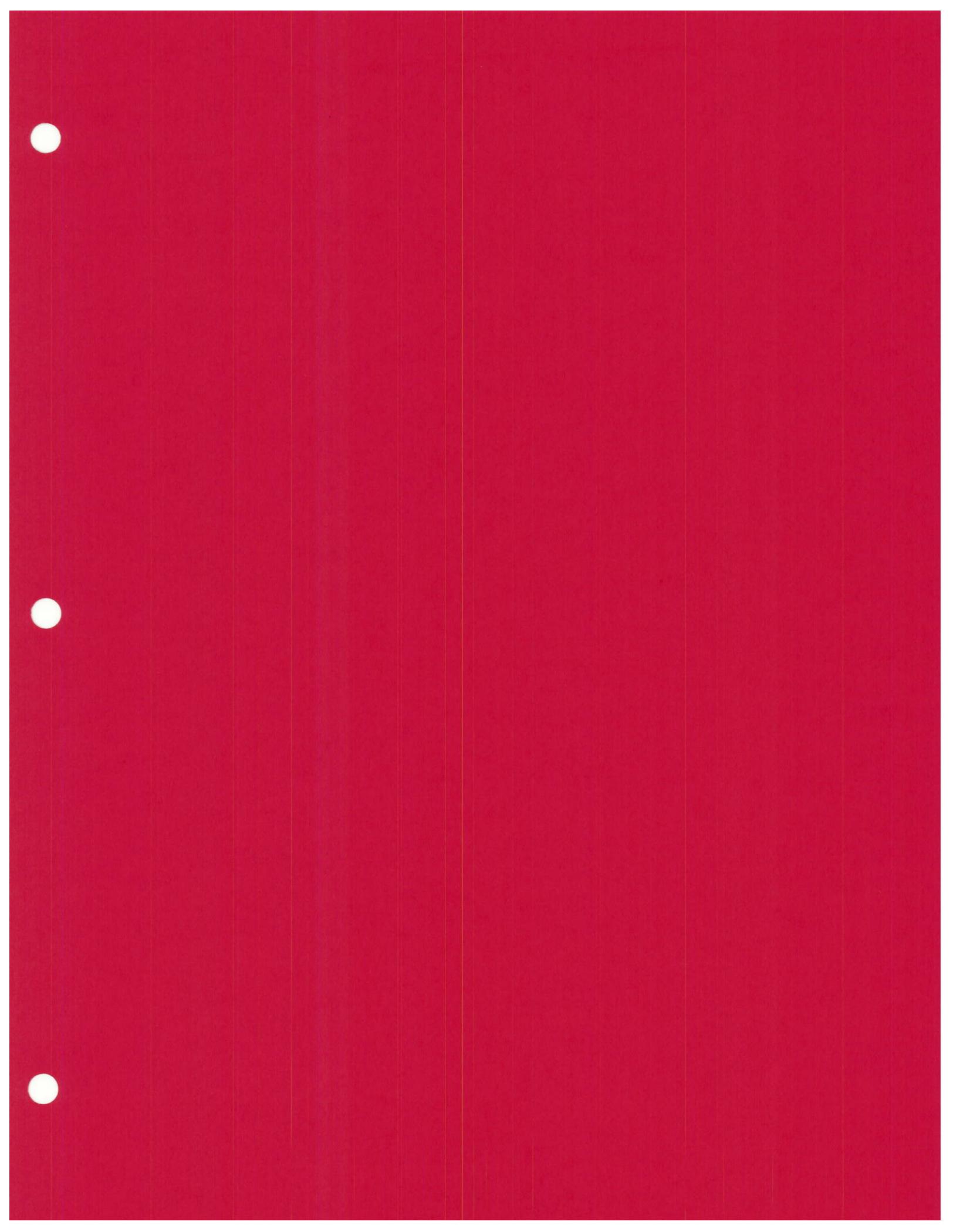
Upon written request to the Federal Transit Administration, the Contractor may request a waiver of the above provision. Such a waiver may be granted if FTA determines that:

- A. Their application would be inconsistent with public interest.
- B. Such matters and products are not produced in the United States in sufficient and reasonably available quantities and of satisfactory quality.
- C. In the case of the procurement of bus or other rolling stock (including train control equipment, communication equipment and traction power equipment) under the Federal Mass Transit Act of 1964, as amended, that (a) the cost of all components which are produced in the United States is more than 60 percent of the cost of components of the bus or equipment described in this paragraph, and (b) final assembly of the bus or equipment described in this paragraph has taken place in the United States.
- D. The inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent in the case of projects for the acquisition of rolling stock and 25 percent in the cost of all other projects. For purposes of this section in calculating costs, labor costs involved in final assembly shall not be included in the calculations.

The bidder certifies that it complies with the Buy America requirements of Section 165 (b) (3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations set forth in 49 CFR Part 661.11.

**By:**  
**Title**  
**Manufacturer:**  
**Date:**

**Darrin Hendrixson**  
**Contract Administrator**  
**ElDorado National Co.**  
**May 13, 2014**



**C. LOBBYING:**

The **BIDDER/VENDOR** certifies compliance with the Anti-Lobbying amendment, 31 U.S.C. ' 1352, as amended by the Lobbying Disclosure Act of 1995, Public Law 104-65 [to be codified at 2 U.S.C. ' 1601, et seq.]. The **BIDDER/VENDOR** also certifies that it will execute the following, "Certification Regarding Lobbying", as required by 49 CFR Part 20, AA New Restriction on Lobbying.@

**EXECUTE THE FOLLOWING**

**CERTIFICATION REGARDING LOBBYING**

Certification for Contracts, Grants, Loans, and Cooperative Agreements  
*(To be submitted with each bid or offer exceeding \$100,000)*

The undersigned,

**ALLIANCE BUS GROUP, INC.**

**(Bidder/Vendor)**

certifies, to the best of his or her knowledge and belief, that:

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

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

**C.** The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all Subrecipient's 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.

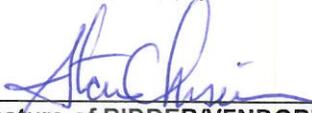
**C. CONTINUED LOBBYING:**

[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.

**ALLIANCE BUS GROUP, INC.**

**(Bidder/Vendor)**

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



Signature of BIDDER/VENDOR's Authorized Official

**Stan Chisum General Manager**

Name and Title of BIDDER's Authorized Official

**5-19-2014**

Date



**SECTION III**

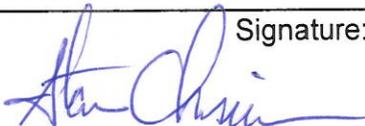
**CERTIFICATION TO PURCHASER:**

The undersigned **BIDDER/VENDOR** certifies that the vehicle(s) furnished will meet or exceed the specifications.

The **BIDDER/VENDOR** hereby certifies that it has attached all applicable documentation including:

1. Federal Motor Vehicle Safety Standards (**FMVSS**)
2. Altoona Test Certification
3. Buy America Certification Form
4. Domestic Content Worksheet
5. Lobbying Certification Form
6. Government wide Debarment & Suspension Certification Form
7. Certification to Purchaser Form
8. Drawing of proposed floor plan.
9. Printed product literature of the vehicle and all ancillary equipment

The undersigned **BIDDER/VENDOR** certifies that it has read all of the bid documents and agrees to abide by the terms, certifications, and conditions thereof.

Name of Company: Alliance Bus Group Inc	Printed Name of Person Completing Form: Stan Chisum
Address: (City, State, Zip) 820 Office Park Circle Lewisville TX 75057	SS# or Tax ID #: 27-4466560
Telephone: (Area Code) (972) 221-4440	Signature: 

<b>Disadvantaged Business Enterprise Information (DBE)</b>	<b>Bidders type of organization (circle)</b>	
Is your firm a DBE? no	Sole Proprietorship	General Proprietorship
(yes) (no)	Corporation	Limited Partnership
If yes, what type?	Other? Please List	



## BIDDER/VENDOR CHECKLIST

THE FOLLOWING CHECKLIST MUST BE COMPLETED BY THE BIDDER/VENDOR BEFORE THE BID IS SUBMITTED.

This checklist will be used to ensure that all required procurement clauses and certifications listed within these special provisions have been read, initialed, and signed by the Bidder/Vendor along with any necessary signed certifications.

**Section I. FOR ALL BIDS:**

**Bidder's initial all lines below:**

- |    |  |            |
|----|--|------------|
|    | FMVSS CERTIFICATION: Circled all applicable Standards & Signed?                      | X<br>_____ |
| A. | Incorporation of Federal Transit Administration Terms: Read?                         | X<br>_____ |
| B. | Federal Changes: Read?   | X<br>_____ |
| C. | DBE Certification: Read?   | X<br>_____ |
| D. | Air Conditioning Performance: Read?  | X<br>_____ |
| E. | Interest of Members of or Delegates to Congress: Read?                               | X<br>_____ |
| F. | Prohibited Interest: Read?   | X<br>_____ |
| G. | Cargo Preference: Read?  | X<br>_____ |
| H. | Energy Conservation: Read?   | X<br>_____ |
| I. | Clean Water and Air: Read?   | X<br>_____ |
| J. | No Obligation By the Federal Government: Read?                                       | X<br>_____ |
| K. | Program Fraud and False or Fraudulent Statements: Read?                              | X<br>_____ |
| L. | Contract Work Hours: Read?   |            |
|    | 1. Overtime requirements:  | X<br>_____ |
|    | 2. Violation; liability for unpaid wages:  | X<br>_____ |
|    | 3. Withholding for unpaid wages:   | X<br>_____ |
|    | 4. Subcontracts:   | X<br>_____ |
|    | 5. Payrolls and basic records:   | X<br>_____ |
| M. | Civil Rights: Read?  |            |
|    | 1. Nondiscrimination:  | X<br>_____ |
|    | 2. Equal Employment Opportunity:   | X<br>_____ |
| N. | Altoona Test Certification: Completed the following?                                 |            |
|    | 1. Report Summary enclosed? Attached?  | X<br>_____ |
|    | 2. Report # <u>PTI-BT-R2014-13-00-P</u> : Completed?                                 | X<br>_____ |
| O. | Debarment and Suspensions: Read & Understood?  | X<br>_____ |
|    | 1. EPLS Report <a href="http://www.epls.gov">www.epls.gov</a> (Must Not be Debarred) | X<br>_____ |

**CONTINUED BIDDER/VENDOR CHECKLIST**

**Section II.**

- A. **Buy America Certification: Completed and signed?**   X
- B. **Domestic Content Worksheet: Calculated, Completed & Signed?**   X
- C. **Lobbying Certification signed: Completed and signed?**   X

**Section III. CERTIFICATION TO PURCHASER** Completed and signed?   X  

I hereby attest that each item was reviewed and that my initials above indicate that the item was properly executed on this date.

ALLIANCE BUS GROUP, INC

5-19-2014

**Bidder/Vendor Company**

**Date**

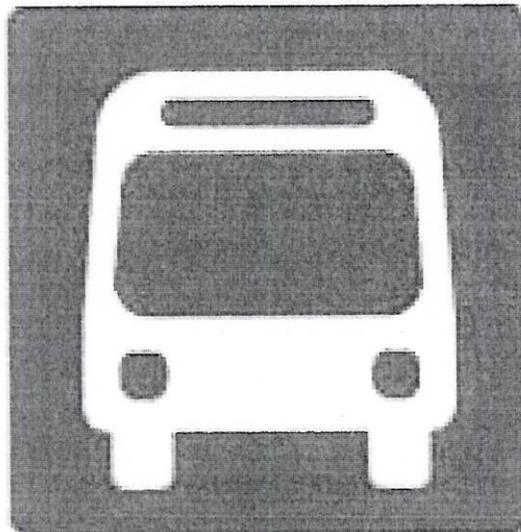
STAN CHISUM



5-19-2014

**Bidder/Vendor Representative**

**Date**



# OKLAHOMA MOTOR VEHICLE COMMISSION



## Certificate of License

# 265

THE OKLAHOMA MOTOR VEHICLE COMMISSION  
has licensed

**ALLIANCE BUS GROUP**  
820 OFFICE PARK CIRCLE  
LEWISVILLE, TEXAS 75057

AS AN AUTHORIZED

**Distributor**

And is responsible for the management of its operations and  
personnel as provided by the laws of the State of Oklahoma.

IN TESTIMONY WHEREOF WE SET OUR HAND AND CAUSE TO BE AFFIXED

THE SEAL OF THE

**OKLAHOMA MOTOR VEHICLE COMMISSION**

*Richard Reynolds*

Chairperson

*Roy K Dockum*

Executive Director

Issue Date: 06/13/2013

Expires: 06/30/2014

# OKLAHOMA MOTOR VEHICLE COMMISSION



## Certificate of License

# 52

THE OKLAHOMA MOTOR VEHICLE COMMISSION  
has licensed

**ELDORADO NATIONAL**  
1655 WALL STREET  
SALINA, KANSAS 67401

AS AN AUTHORIZED  
**Manufacturer**

And is responsible for the management of its operations and  
personnel as provided by the laws of the State of Oklahoma.

IN TESTIMONY WHEREOF WE SET OUR HAND AND CAUSE TO BE AFFIXED

THE SEAL OF THE  
OKLAHOMA MOTOR VEHICLE COMMISSION

*Randy Coy*

Chairperson

*Roy K Dockum*

Executive Director

Issue Date: 06/04/2012

Expires: 06/30/2013

# SECTION III

**PARTIAL  
STURAA TEST  
7 YEAR  
200,000 MILE BUS  
from  
ELDORADO NATIONAL, INC.  
MODEL 240 AEROTECH  
OCTOBER 2000  
PTI-BT-R2014-13-00-P**

PENNSSTATE



---

**The Pennsylvania Transportation Institute**

201 Research Office Building (814) 865-1891  
The Pennsylvania State University  
University Park, PA 16802

**Bus Testing and Research Center**

6th Avenue and 45th Street (814) 949-7944  
Altoona, PA 16602

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## EXECUTIVE SUMMARY

Eldorado National submitted a model 240 Aerotech, diesel powered 17 seat bus, for a Partial STURAA Test in the 7yr/200,000 mile category. The Federal Transit Administration determined that the following tests would be performed: 1.2 Servicing, Preventive Maintenance, Repair & Maintenance, 2. Reliability and 5.7 Structural Durability Test. The odometer reading at the time of delivery was 1,196 miles. Testing started on August 1, 2000 and was completed on October 6, 2000. The Check-In section of the report provides a description of the bus and specifies its major components.

The primary part of this partial test was the Structural Durability Test, which also provides the information for the Maintainability and Reliability results. The Structural Durability Test was started on August 7, 2000 and was completed on September 26, 2000.

The first segment of the Structural Durability Test was performed with the bus loaded to a GVW of 14,000 lbs. The number of standing passengers was reduced from 17 standees and one wheelchair position, to 5 standees and one wheelchair position (600 lb per. wheelchair position). The reduction in passenger weight was necessary to avoid exceeding the GAWR (9,450 lbs.) of the rear axle. The middle segment was performed at a SLW of 13,275 lbs. The final segment was performed at a curb weight of 10,150 lbs. Durability driving resulted in no unscheduled maintenance failures.

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. Problems also are listed by class as defined in Section 2. The test bus encountered no failures during the Structural Durability Test.

## 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
PSBRTF	- Penn State Bus Research and Testing Facility
PTI	- Pennsylvania Transportation Institute
rpm	- revolutions per minute
SAE	- Society of Automotive Engineers
SCH	- test scheduler
SEC	- secretary
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 is manufactured using a Ford E-350 Super Duty Chassis. The bus has a front door, located to the rear of the front axle, and a dedicated wheelchair access door equipped with a Ricon Corp. model S2005-510 wheelchair lift to the rear of the rear axle. The engine type is a diesel fueled Ford Power Stroke 7.3 L. The transmission is a Ford 4R100E.

The measured curb weight is 3,800 lbs for the front axle and 6,350 lbs for the rear axle. These combined weights provide a total measured curb weight of 10,150 lbs. There are 17 seats including the driver, 1 wheelchair position, and room for 27 standing passengers bringing the total passenger capacity to 44 and one wheelchair position. Gross load is  $150 \text{ lb} \times 44 = 6,600 \text{ lbs.} + 600 \text{ lb (wheelchair position)} = 7,200 \text{ lbs.}$  At full capacity, the measured gross vehicle weight is 14,850 lbs. This value was used for all static tests. In order to avoid exceeding the GAWR (9,450 lbs) of the rear axle, the ballast for 22 standing passengers was eliminated. The reduction from full capacity resulted in an adjusted measured gross vehicle weight of 14,000 lbs and was used for all dynamic testing.

### VEHICLE DATA FORM

Bus Number: 2014	Arrival Date: 8-1-00
Bus Manufacturer: 2014	Vehicle Identification Number (VIN): 1FDXE45F1YHB55119
Model Number: 240 Aerotech	Date: 8-1-00
Personnel: S.C.	

WEIGHT: \* Values in parentheses indicate the adjusted weights necessary to avoid exceeding the GAWR. These values were used for all dynamic testing.

Individual Wheel Reactions:

Weights (lb)	Front Axle		Middle Axle		Rear Axle	
	Right	Left	Right	Left	Right	Left
CW	2,000	1,800	N/A	N/A	3,400	2,950
SLW	2,175	2,075	N/A	N/A	4,625	4,400
GVW	2,300 (2,300)	2,200 (2,200)	N/A	N/A	5,300 (4,875)	5,050 (4,625)

Total Weight Details:

Weight (lb)	CW	SLW	GVW	GAWR
Front Axle	3,800	4,250	4,500 (4,500)	4,600
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	6,350	9,025	10,350 (9,500)	9,450
Total	10,150	13,275	14,850 (14,000)	GVWR: 14,050

Dimensions:

Length (ft/in)	24 / 7.25
Width (in)	94.25
Height (in)	113.00
Front Overhang (in)	30.25
Rear Overhang (in)	87.75
Wheel Base (in)	177.25
Wheel Track (in)	Front: 68.50
	Rear: 78.00

Bus Number: 2014	Date: 8-1-00
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CLEARANCES:

Lowest Point Outside Front Axle	Location: Steering stabilizer Clearance(in): 11.5
Lowest Point Outside Rear Axle	Location: Tailpipe Clearance(in): 13.0
Lowest Point between Axles	Location: Step well Clearance(in): 8.8
Ground Clearance at the center (in)	11.40
Front Approach Angle (deg)	28.00
Rear Approach Angle (deg)	9.60
Ramp Clearance Angle (deg)	9.20
Aisle Width (in)	17.75
Inside Standing Height at Center Aisle (in)	79.10

BODY DETAILS:

Body Structural Type	Integral		
Frame Material	Steel		
Body Material	Fiberglass		
Floor Material	Plywood		
Roof Material	Aluminum & fiberglass		
Windows Type	<input type="checkbox"/> Fixed	<input checked="" type="checkbox"/> Movable	
Window Mfg./Model No.	KTG / AS3 M3 DOT 620		
Number of Doors	<u>1</u> Front	<u>1</u> Rear	
Mfr. / Model No.	ENC / 315000GM		
Dimension of Each Door (in)	Front-26.2 x 80.0	Rear-44.7 x 72.0	
Passenger Seat Type	<input type="checkbox"/> Cantilever	<input checked="" type="checkbox"/> Pedestal	<input type="checkbox"/> Other (explain)
Mfr. / Model No.	Freedman / Midback FWT		
Driver Seat Type	<input type="checkbox"/> Air	<input type="checkbox"/> Spring	<input checked="" type="checkbox"/> Other (Cushion)
Mfr. / Model No.	Freedman / 6813000M		
Number of Seats (including Driver)	17 + 1 wheelchair position		
Bus Number: 2014		Date: 8-1-00	

BODY DETAILS (Contd..)

Free Floor Space ( ft <sup>2</sup> )	41.6				
Height of Each Step at Normal Position (in)	Front	1. 10.8	2. 8.0	3. 8.6	4. N/A
	Middle	1. N/A	2. N/A	3. N/A	4. N/A
	Rear	1. N/A	2. N/A	3. N/A	4. N/A
Step Elevation Change - Kneeling (in)	N/A				

ENGINE

Type	<input checked="" type="checkbox"/> C.I.	<input type="checkbox"/> Alternate Fuel	
	<input type="checkbox"/> S.I.	<input type="checkbox"/> Other (explain)	
Mfr. / Model No.	Ford / Power Stroke 7.3 L		
Location	<input checked="" type="checkbox"/> Front	<input type="checkbox"/> Rear	<input type="checkbox"/> Other (explain)
Fuel Type	<input type="checkbox"/> Gasoline	<input type="checkbox"/> CNG	<input type="checkbox"/> Methanol
	<input checked="" type="checkbox"/> Diesel	<input type="checkbox"/> LNG	<input type="checkbox"/> Other (explain)
Fuel Tank Capacity (indicate units)	55 gals.		
Fuel Induction Type	<input checked="" type="checkbox"/> Injected	<input type="checkbox"/> Carburetion	
Fuel Injector Mfr. / Model No.	Ford / Power Stroke 7.3 L		
Carburetor Mfr. / Model No.	N/A		
Fuel Pump Mfr. / Model No.	Ford / Power Stroke 7.3 L		
Alternator (Generator) Mfr. / Model No.	Penntex / PX-5		
Maximum Rated Output (Volts / Amps)	14 / 200		
Air Compressor Mfr. / Model No.	N/A		
Maximum Capacity (ft <sup>3</sup> / min)	N/A		
Starter Type	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Pneumatic	<input type="checkbox"/> Other (explain)
Starter Mfr. / Model No.	Ford / OEM		

Bus Number: 2014	Date: 8-1-00
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TRANSMISSION

Transmission Type	<input type="checkbox"/> Manual	<input checked="" type="checkbox"/> Automatic	
Mfr. / Model No.	Ford / 4R100E		
Control Type	<input checked="" type="checkbox"/> Mechanical	<input type="checkbox"/> Electrical	<input type="checkbox"/> Other (explain)
Torque Converter Mfr. / Model No.	Ford / 4R100E		
Integral Retarder Mfr. / Model No.	N/A		

SUSPENSION

Number of Axles	2		
Front Axle Type	<input checked="" type="checkbox"/> Independent	<input type="checkbox"/> Beam Axle	
Mfr. / Model No.	Ford / Twin I-Beam		
Axle Ratio (if driven)	N/A		
Suspension Type	<input type="checkbox"/> Air	<input checked="" type="checkbox"/> Spring	<input type="checkbox"/> Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Motorcraft / F5UA-18045-NC		
Middle Axle Type	<input type="checkbox"/> Independent	<input type="checkbox"/> Beam Axle	
Mfr. / Model No.	N/A		
Axle Ratio (if driven)	N/A		
Suspension Type	<input type="checkbox"/> Air	<input type="checkbox"/> Spring	<input type="checkbox"/> Other (explain)
No. of Shock Absorbers	N/A		
Mfr. / Model No.	N/A		
Rear Axle Type	<input type="checkbox"/> Independent	<input checked="" type="checkbox"/> Beam Axle	
Mfr. / Model No.	Dana / 80HD		
Axle Ratio (if driven)	4.10		
Suspension Type	<input type="checkbox"/> Air	<input checked="" type="checkbox"/> Spring	<input type="checkbox"/> Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Motorcraft / XC25-18080-EA		
Bus Number: 2014	Date: 8-1-00		

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Accuride / 16 x 6
	Tire Mfr./ Model No.	Firestone R4S / LT225/75R16
Rear	Wheel Mfr./ Model No.	Accuride / 16 x 6
	Tire Mfr./ Model No.	Firestone R4S / LT225/75R16

BRAKES

Front Axle Brakes Type	<input type="checkbox"/> Cam	<input checked="" type="checkbox"/> Disc	<input type="checkbox"/> Other (explain)
Mfr. / Model No.	Ford / OEM		
Middle Axle Brakes Type	<input type="checkbox"/> Cam	<input type="checkbox"/> Disc	<input type="checkbox"/> Other (explain)
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	<input type="checkbox"/> Cam	<input checked="" type="checkbox"/> Disc	<input type="checkbox"/> Other (explain)
Mfr. / Model No.	Kelsey Hayes / KH12068401		
Retarder Type	N/A		
Mfr. / Model No.	N/A		

HVAC

Heating System Type	<input type="checkbox"/> Air	<input checked="" type="checkbox"/> Water	<input type="checkbox"/> Other
Capacity (Btu/hr)	65,000(body) 35,000(chassis)		
Mfr. / Model No.	N/A		
Air Conditioner	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Location	Front - dash Rear - Interior roof mount		
Capacity (Btu/hr)	52,000 - body		
A/C Compressor Mfr. / Model No.	Carrier / 3M-1 CM3		

STEERING

Steering Gear Box Type	Hydraulic gear
Mfr. / Model No.	Ford / XR-50 H.D.
Steering Wheel Diameter	15.2
Number of turns (lock to lock)	4

Bus Number: 2014	Date: 8-1-00
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OTHERS

Wheel Chair Ramps	Location: N/A	Type: N/A
Wheel Chair Lifts	Location: Right rear	Type: Hydraulic platform
Mfr. / Model No.	Ricon Corp. / S2005-510	
Emergency Exit	Location: Windows Doors	Number: 3 1

CAPACITIES

Fuel Tank Capacity (units)	55 gals.
Engine Crankcase Capacity (gallons)	3.75
Transmission Capacity (gallons)	4.10
Differential Capacity (gallons)	1.00
Cooling System Capacity (gallons)	7.50
Power Steering Fluid Capacity (gallons)	N/A



COMPONENT/SUBSYSTEM INSPECTION FORM

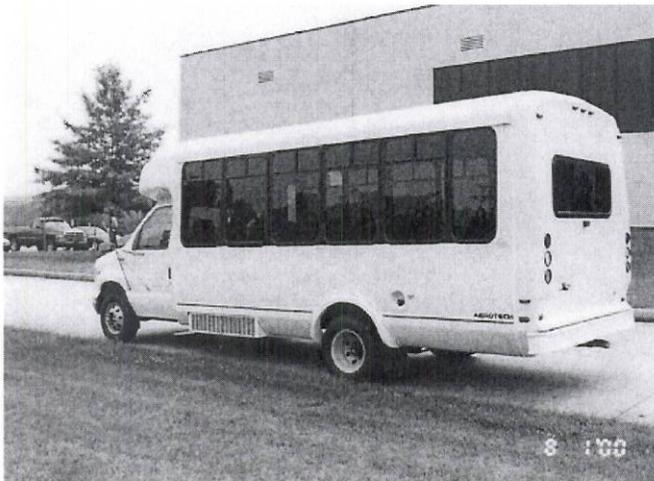
Bus Number: 2014	Date: 8-1-00
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Subsystem	Checked	Comments
Air Conditioning Heating and Ventilation	✓	
Body and Sheet Metal	✓	
Frame	✓	
Steering	✓	
Suspension	✓	
Interior/Seating	✓	
Axles	✓	
Brakes	✓	
Tires/Wheels	✓	
Exhaust	✓	
Fuel System	✓	
Power Plant	✓	
Accessories	✓	
Lift System	✓	
Interior Fasteners	✓	
Batteries	✓	

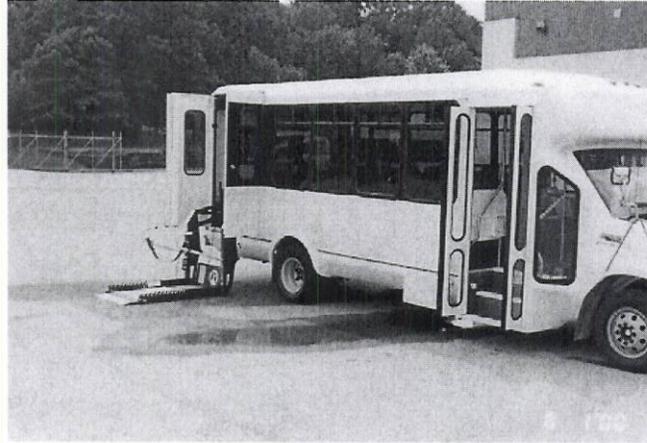
## CHECK-IN



## ELDORADO NATIONAL'S MODEL 240 AEROTECH



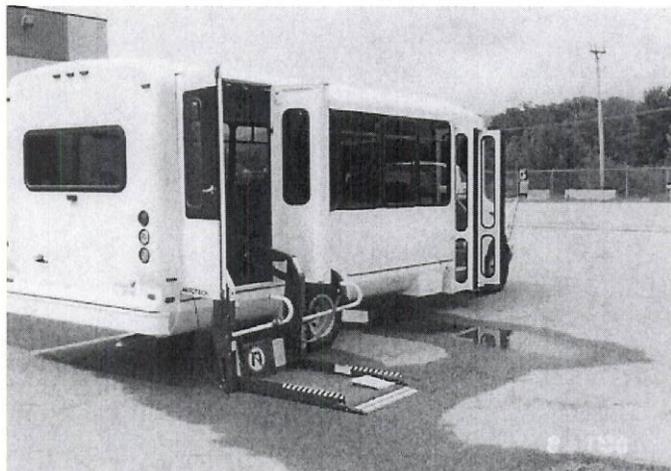
## CHECK-IN CONT.



**ELDORAD  
NATIONA**

**O  
L'S**

**MODEL 240 AEROTECH EQUIPPED  
WITH A RICON CORPORATION  
MODEL S2005-510 WHEELCHAIR LIFT**



## 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 bus 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. Table 1 is a list of the lubricating products used in servicing. Note: the test bus submitted for testing encountered no failures during Structural Durability Testing.

**Table 1. STANDARD LUBRICANTS**

The following is a list of Texaco lubricant products used in bus testing conducted by the Penn State University Altoona Bus Testing Center:

<u>ITEM</u>	<u>PRODUCT CODE</u>	<u>TEXACO DESCRIPTION</u>
Engine oil	#2112	URSA Super Plus SAE 30
Transmission oil	#1866	Automatic Trans Fluid Mercon/Dexron II Multipurpose
Gear oil	#2316	Multigear Lubricant EP SAE 80W90
Wheel bearing & Chassis grease	#1935	Starplex II

## 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 enroute 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. 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 classification of repairs according to subsystem is intended to emphasize those systems which had persistent minor or more serious problems. There were no failures encountered during the Structural Durability Test.

## 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 7,500 miles; approximately 5,000 miles on the PSBRTF Durability Test Track and approximately 2,500 miscellaneous other miles. The test will be conducted with the bus operated under three different loading conditions. The first segment will consist of approximately 3,000 miles with the bus operated at GVW. The second segment will consist of approximately 1,500 miles with the bus operated at SLW. The remainder of the test, approximately 3,000 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 August 7, 2000 and was conducted until September 26, 2000. The first 3,000 miles were performed at a GVW of 14,000 lbs. The number of standing passengers was reduced from 27 standees and one wheelchair position, to 5 standees and one wheelchair position (600 lb per. wheelchair position). This reduction in passenger weight was necessary to avoid exceeding the GAWR (9,450 lbs) of the rear axle. The GVW segment was completed on August 14, 2000. The next 1,500 mile SLW segment was performed at 13,275 lbs and completed on September 14, 2000. The final 3,000 mile segment was performed at a CW of 10,150 lbs and completed on September 26, 2000.

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 PSBRTF and Durability Test Track are attached for reference. Also, a durability element profile detail shows all the measurement of the different conditions. There were no failures encountered during the Structural Durability Test.

**ELDORADO - TEST BUS #2014**  
**MILEAGE DRIVEN/RECORDED FROM DRIVERS' LOGS**

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
08/07/00 TO 08/13/00	201.00	59.00	260.00
08/14/00 TO 08/20/00	455.00	21.00	476.00
08/21/00 TO 08/27/00	1038.00	150.00	1188.00
08/28/00 TO 09/03/00	557.00	571.00	1128.00
09/04/00 TO 09/10/00	671.00	178.00	849.00
09/11/00 TO 09/17/00	785.00	320.00	1105.00
09/18/00 TO 09/24/00	1034.00	145.00	1179.00
09/25/00 TO 10/01/00	0.00	952.00	952.00
<b>TOTAL</b>	<b>4741.00</b>	<b>2396.00</b>	<b>7137.00</b>

Table 4. Driving Schedule for Bus Operation on the Durability Test Track.

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

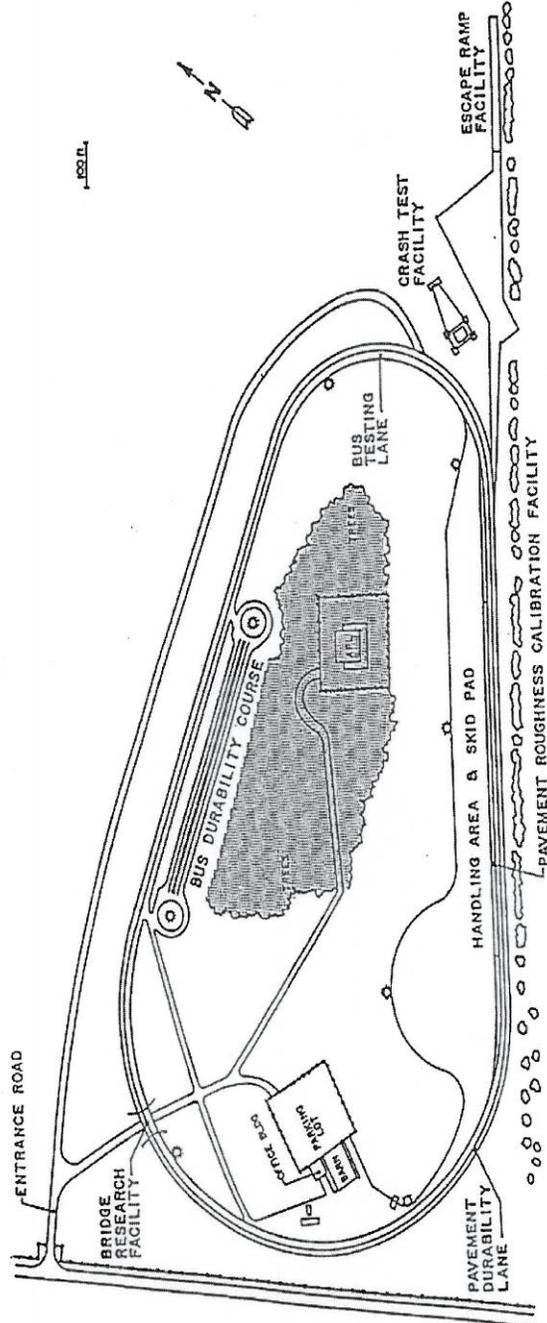
B—Break

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

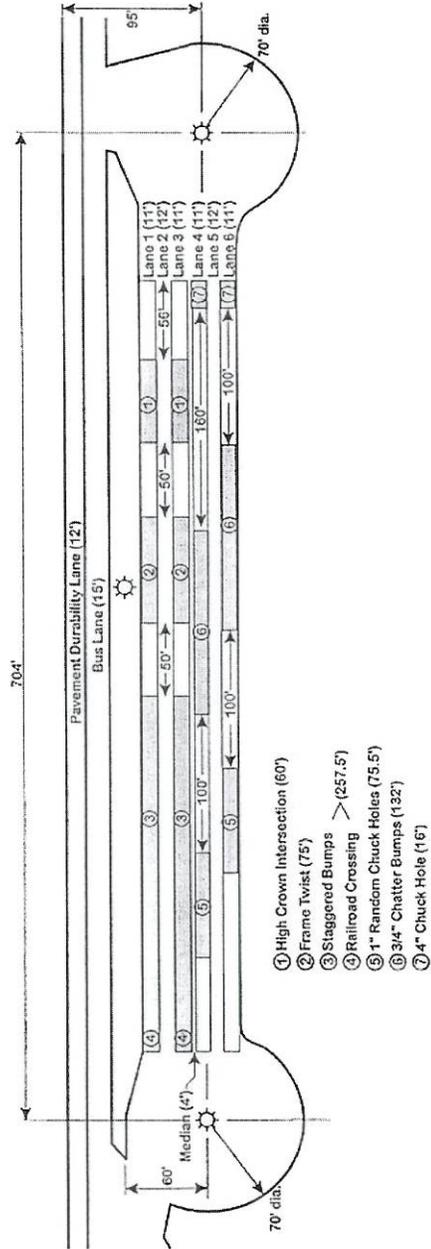
D—Drive bus as specified by procedure

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

**“PLAN VIEW OF PENN STATE BUS TESTING AND RESEARCH FACILITY”**



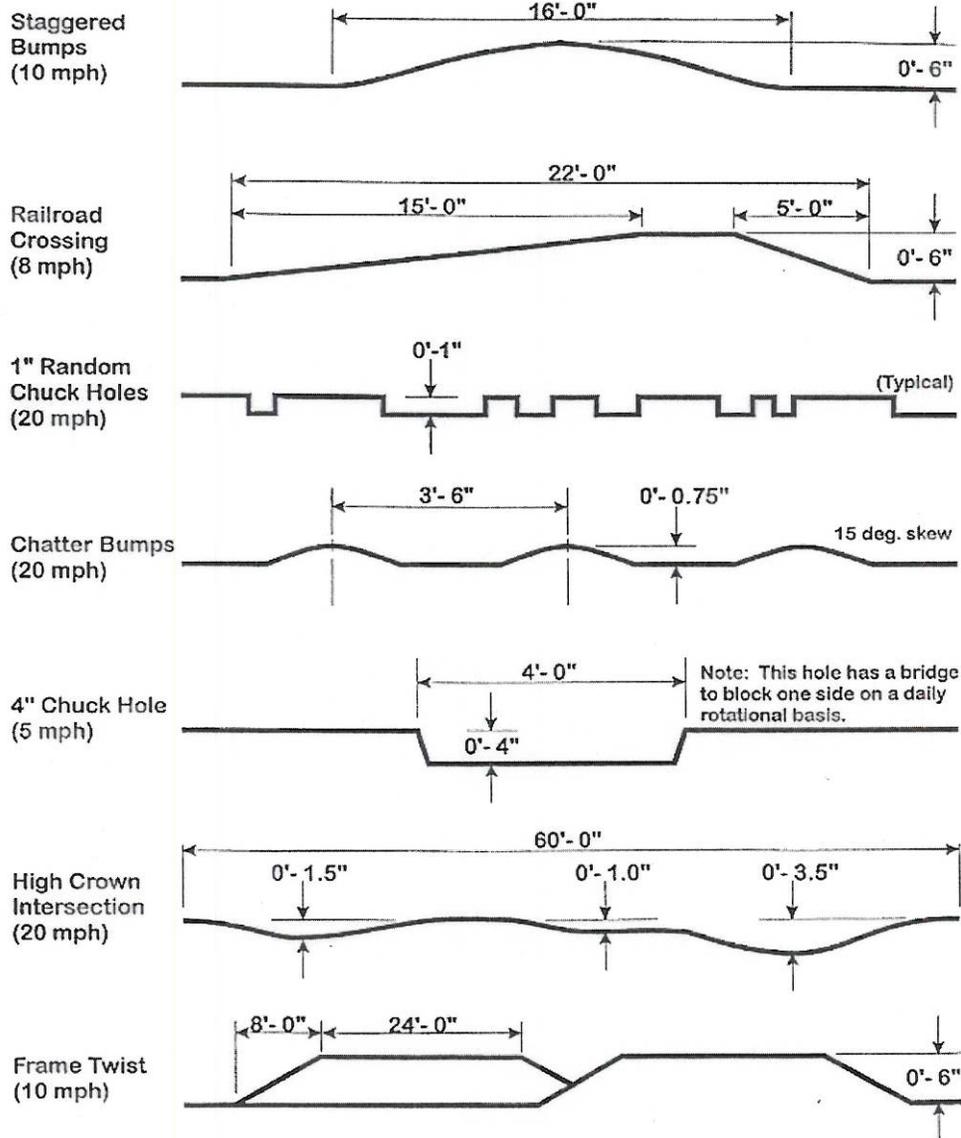
**BUS TESTING AND RESEARCH TEST TRACK  
UNIVERSITY PARK, PA**



Plan View

# Vehicle Durability Test Track

The Pennsylvania Transportation Institute  
Penn State



## Durability Element Profiles

The Pennsylvania Transportation Institute  
 Penn State