

State of Georgia 2016 Mass Transit Solicitation

99999-SPD-SPD0000138

APTA Form CER 10: Vehicle Technical Information

NOTE: This is a sample form. The Agency should customize it to comply with its proposed requirements.

This form must be completed and included in the Technical Proposal.

GENERAL COACH DATA SHEET

[insert bus type]

Bus manufacturer:	ARBOC Specialty Vehicles, LLC
Bus model:	Spirit of Liberty
Understructure manufacturer:	Freightliner Custom Chassis
Model number:	XBA

Basic Body Construction

Type:	Body on chassis
Tubing or frame member thickness and dimensions	
Overstructure	1.5"x1.5" 16ga Steel Tube
Understructure	2"x2"x0.25" Steel Tube
Skin thickness and material	
Roof	.1875" with substrate
Sidewall	.1875" with substrate
Skirt panel	.1875" with substrate
Front end	.125" Fiberglass
Rear end	.120" TPO

Dimensions

Overall length	Over bumpers	31	ft	3	in.
	Over body	30	ft	6	in.
Overall width	Over body excluding mirrors	8	ft	4	in.
	Over body including mirrors—driving position	10	ft	5	in.
	Over tires front axles	7	ft	10	in.
	Over tires center axle		ft		in.
	Over tires rear axles	7	ft	9	in.

Overall height (maximum)

10	ft	9	in.
10	ft	0	in.

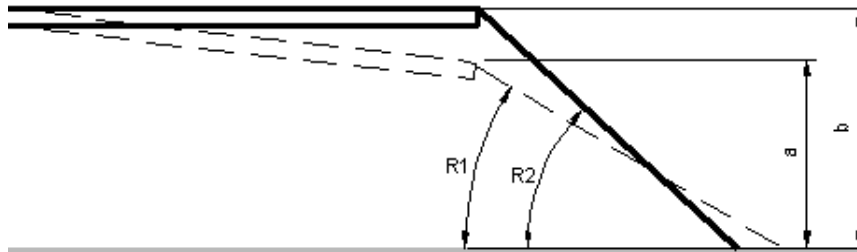
Overall height (main roof line)

Angle of approach	9	deg
Breakover angle	12	deg
Breakover angle (rear)		deg
Angle of departure	8.7	deg

Doorway Dimensions

	Front		Rear	
Width between door posts	42	in.		in.
Door width between panels	39	in.		in.
Clear door width (with Entry Assist)	35	in.		in.
Doorway height	80	in.		in.
Knuckle clearance	1.5	in.		in.

Step height from ground measured at center of doorway



Front doorway, empty

Kneeled	a.	10	in.
Unkneeled	b.	13	in.

Ramp angle

R1	9	deg
R2	13	deg

Rear Doorway, empty

a.		in.
b.		in.

Interior head room (center of aisle)

Front axle location	85	in.
Center axle location		in.
Rear axle location	79	in.

Aisle width between transverse seats

38	in.
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Floor height above ground (centerline of bus)

At front door	10	in.
At front axle	19.5	in.
At drive axle	30	in.

At rear door in.

Minimum ground clearance (between bus and ground, with bus unkneeled)

Excluding axles 8 in.

Including axles 6 in.

Horizontal turning envelope (see diagram below)

Outside body turning radius, TR0 (including bumper)

26 ft 0 in.

Front inner corner radius, TR1

15 ft 6 in.

Front wheel inner turning radius, TR2

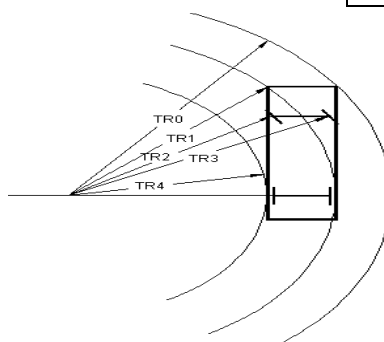
9 ft 6 in.

Front wheel outer turning radius, TR3

ft in.

Inside Body Turning Radius innermost point, TR4 (including bumper)

ft in.



Wheel base

Front 150 in.

Rear in.

Overhang, centerline of axle over bumper

Front 95.25 in.

Rear 128.75 in.

Floor

Interior length

21 ft 8 in.

Interior width (excluding coving)

8 ft 0 in.

Total standee area (approximately)

24 ft²

Minimum distance between wheelhouses:

Front 36 in.

Rear 28 in.

Center in.

Maximum interior floor slope (from horizontal)

2.5 deg

Passenger capacity provided

Total maximum seating	29	
Standee capacity	10	
Minimum hip to knee room	28	in.
Minimum foot room	9	in.

Weight

	No. of people	Front axle			Center axle			Rear axle			Total bus
		Left	Right	Total	Left	Right	Total	Left	Right	Total	
Empty bus, full fuel and farebox	0	3107	2657	5764				6355	5860	12215	17979
Fully seated, full fuel and farebox	29	3770	3244	7014				8323	7825	16148	23165
Fully loaded standee and fully seated, full fuel and farebox	39	4322	3491	7813				8521	8328	16849	24662
Crush load (1.5x fully loaded)											
GVWR				25990							
GAWR				10000						17500	

Engine, main

Manufacturer	Cummins				
Type and weight rating	Diesel				
Model number	ISB 6.7				
Bore	4.21	in.			
Stroke	4.88	in.			
Displacement	408	in. ³			
Compression ratio	17.3:1				
Injector type and size	Direct Injection				
Net SAE horsepower	240	hp	at	2300	RPM
Net SAE torque	560	lb/ft	at	1600	RPM
Crankcase oil capacity					
New engine, dry		gal			
New engine, wet	3	gal			
Turbocharger make and model	Holset, VGT				
Maximum speed, no load		RPM			
Maximum speed, full load		RPM			
Speed at idle		RPM			
Speed at fast idle		RPM			

Engine information/graphs to be attached with this form:

Engine speed vs. road speed

Torque vs. engine speed

Horsepower vs. engine speed

Fuel consumption vs. engine speed

Vehicle speed vs. time (both loaded and unloaded)

Vehicle speed vs. grade (both loaded and unloaded)

Acceleration vs. time

Change of acceleration vs. time

Hybrid drive or transmission

Manufacturer	Allison			
Type	Automatic B220			
Speeds	6			
Gear ratios	Forward:	3.10-1, 1.81-1, 1.41-1, 1.00-1, 0.71-1, 0.61-1	Reverse:	4.49-1

Shift speeds

1st–2nd	10.7	mph
2nd–3rd	22.7	mph
3rd–4th	29.2	mph
4th–5th (if applicable)	41.1	mph
5th–6th (if applicable)	57.2	mph

Fuel capacity (including heat exchanger and filters)	70 gal
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Voltage regulator

Manufacturer	Leece-Neville
Model	Integrated

Voltage equalizer

Manufacturer	
Model	

Alternator

Manufacturer	Leece-Neville		
Type	Air Cooled		
Model	A0014944PA		
Output at idle	270	amps	
Output at maximum speed		amps	
Maximum warranted speed		rpm	
Speed at idle (approximately)		rpm	
Drive type	Engine Belt		

Starter motor

Manufacturer	Delco 29MT
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Type	Gear Reduction
Model	82200571

Air compressor

Manufacturer	Cummins		
Type	Single Piston		
Rated capacity	18.7	CFM	
Capacity at idle (approximately)		CFMs	
Capacity at maximum speed (engine)		CFM	
Maximum warranted speed		rpm	
Speed idle		rpm	
Drive type	Engine Belt		
Governor:			
Cut-in pressure		psi	
Cut-out pressure		psi	

Axles

First

Manufacturer	Meritor		
Type	Drop Axle		
Model number	MFS 10		
Gross axle weight rating	100 00	lbs	
Axle load		lbs	

Second

Manufacturer	Detroit		
Type	Drive Axle		
Model number	19K 2N		
Gross axle weight rating	175 00	lbs	
Axle load		lbs	

Third

Manufacturer			
Type			
Model number			
Gross axle weight rating		lbs	
Axle load		lbs	
Axle ratio			

Suspension system

Manufacturer	Reyco Granning		
Type:	First:	Solid Beam	

Springs:	Second:	Trailing Arm
	Third:	
	First:	Firestone
	Second:	Firestone
	Third:	

Joint

Manufacturer	Dana Spicer
Type	SPL100
Model number	

Wheels and tires

Wheels

Make	Accuride
Size	19.5"
Capacity	5,000 per wheel
Material	Steel

Tires

Manufacturer	Michelin
Type	XZE
Size	245/70R19.5
Load range/air pressure	H/120 psi

Steering, power

Pump

Manufacturer and model number	TRW
Type	Internal
Relief pressure	2865 psi

Booster/gear box

Manufacturer and model number	TRW
Type	TA565
Ratio	

Power steering fluid capacity	2 gal
Maximum effort at steering wheel	lbs (unloaded stationary coach on dry asphalt pavement)
Steering wheel diameter	18 in.

Brakes

Make of fundamental brake system	Hydraulic Disc
Brake chambers vendor size and part number:	First: Bosch 66mm Caliper
	Second: Bosch 66mm Caliper
	Third:

Brake operation effort

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Slack adjuster's vendor's type and part numbers

First:	Right:	
	Left:	
Second:	Right:	
	Left:	
Third:	Right:	
	Left:	
Length:	First take-up:	
	Second take-up:	
	Third take-up:	

Brake drums/discs

First:	Manufacturer		
	Part number		
	Diameter		in.
Second:	Manufacturer		
	Part number		
	Diameter		in.
Third:	Manufacturer		
	Part number		
	Diameter		in.

Brake lining manufacturer

Type

Brake lining identification

First:	Forward	
	Reverse	
Second:	Forward	
	Reverse	
Third:	Forward	
	Reverse	

Brake linings per shoe

First	
Second	
Third	

Brake lining widths

First

 in.

Second in.
Third in.

Brake lining lengths

First in.
Second in.
Third in.

Brake lining thickness in.

Brake lining per axle

First sq. in.
Second sq. in.
Third sq. in.

Cooling system

Radiator/charge air cooler

Manufacturer
Type
Model number
Number of tubes
Tubes outer diameter in./ in.
Fins per inch fins
Fin thickness in.
Total cooling and heating system capacity gal
Radiator fan speed control
Surge tank capacity quarts
Engine thermostat temperature setting: Initial opening (fully closed) °F
Fully open °F
Overheat alarm temperature sending unit setting °F
Shutdown temperature setting °F

Air reservoir capacity

Supply reservoir in.³
Primary reservoir in.³
Secondary reservoir in.³
Packing reservoir in.³
Accessory reservoir in.³
Other reservoir type in.³

Heating, ventilation and air conditioning equipment

Heating system capacity BTU/hr
Air conditioning capacity BTU

Ventilating capacity CFM

Compressor

Manufacturer	<input type="text" value="Valeo"/>		
Model	<input type="text" value="TM43"/>		
Number of cylinders	<input type="text"/>		
Drive ratio	<input type="text"/>		
Maximum warranted speed	<input type="text"/>	rpm	
Operating speed	<input type="text"/>	rpm (recommended)	
Weight	<input type="text"/>	lbs	
Oil capacity	Dry	<input type="text"/>	gal
	Wet	<input type="text"/>	gal
Refrigerant:	Type	<input type="text"/>	<input type="text"/> lbs

Condenser

Manufacturer	<input type="text" value="Valeo"/>		
Model	<input type="text" value="11122735AD"/>		
Number of fins/in.	<input type="text" value="24"/>		
Outer diameter of tube	<input type="text"/>	in.	
Fin thickness	<input type="text" value=".01"/>	in.	

Condenser fan

Manufacturer	<input type="text" value="Valeo"/>		
Model	<input type="text"/>		
Fan diameter	<input type="text" value="11"/>	in.	
Speed maximum	<input type="text" value="n/a"/>	rpm	
Flow rate (maximum)	<input type="text" value="n/a"/>	CFM	

Receiver

Manufacturer	<input type="text" value="Valeo"/>		
Model	<input type="text"/>		
Capacity	<input type="text" value="15grams"/>	lbs	

Condenser fan drive motors

Manufacturer	<input type="text" value="Valeo"/>		
Model	<input type="text"/>		
Type	<input type="text" value="PM"/>		
Horsepower	<input type="text"/>	hp	
Operating speed	<input type="text"/>	rpm	

Evaporator fan drive motors

Manufacturer	<input type="text" value="Valeo"/>		
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Model		
Type	Dual squirrel Cage	
Horsepower	n/a	hp
Operating speed	n/a	rpm

Evaporator(s)

Manufacturer	Valeo	
Model	Mini Sphere	
Number of rows	24	
Number of fins/in.	12	
Outer diameter of tube	.25	in.
Fin thickness	.01	in.
Number of evaporators	1	

Expansion valve

Manufacturer	Valeo
Model	n/a

Filter-drier

Manufacturer	Valeo
Model	Mini Sphere

Heater cores

Manufacturer	Valeo	
Model	Mini Sphere HT	
Capacity	70000	Btu/hr
Number of rows	2	
Number of fins/in.	12	
Outer diameter of tube	.25	in.
Fin thickness	.01	in.
Number of heater cores	1	

Floor heater blowers

Front	In Rooftop unit
Rear	

Controls

Manufacturer	Valeo
Model	

Driver's heater

Manufacturer	ACC Climate Control
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Model	PN: 24042A0000B	
Capacity	50000	Btu/hr

Ventilation system

Type	Freeblow
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Coolant heater

Make	Espar	
Model	05 001 282	
Capacity	15000	Btu

Interior lighting

Manufacturer	TecNiq	
Type	LED	
Number of fixtures	8	
Size of fixtures	4" round	
Power pack	12 volt	

Doors

Front

Manufacturer of operating equipment	A&M Systems
Type of door	Double out
Type of operating equipment	Electric

Rear

Manufacturer of operating equipment	
Type of door	
Type of operating equipment	

Passenger windows

Front

Manufacturer	Cleer Vision		
Model	CT Series		
Type	Clamp Ring		
Number:	Side	13	
	Rear		
Sizes:	36x36	19x36	
Glazing:	Type	Tempered	
	Thickness	.125"	
	Color of tint	Black	
	Light transmission	24%	

Mirrors

	Size	Type	Manufacturer	Part no.	Model no.
Right side exterior	9x13	Heated/remote	Safe Fleet		
Left side exterior	9x13	Heated/remote	Safe Fleet		
Center rearview	6x16	flat			
Front entrance area					
Upper-right corner					
Rear exit area					

Seats**Passenger**

Manufacturer	Freedman
Model	GO-ES
Type	Mid-Hi 3pt

Operator

Manufacturer	USSC
Model and part number	G2 Series
Type	Air Suspension

Paint

Manufacturer	
Type	

Wheelchair ramp equipment

Manufacturer	Braun Mobility		
Model number	RA300		
Capacity	1000	lbs	
Width of platform	34	in.	
Length of platform	62	in.	
System fluid capacity		quarts	
Type of fluid used	Exxon Univis HVI		
Operating hydraulic pressure		psi	
Hydraulic cylinders:	Size		
	Number		

Wheelchair securement equipment

Manufacturer	Q'Straint
Model number	Q8100-A-SC3 (Deluxe Slide-N-Click)

Destination signs

Manufacturer	Twin Vision
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Type

Mobilite LED

Character length

Front destination	42.13	in.
Front route		in.
Curbside destination	27.96	in.
Rear route		in.

Character height

Front destination	4.1	in.
Front route		in.
Curbside destination	4.1	in.
Rear route		in.

Number of characters

Front destination	13
Front route	
Curbside destination	7
Rear route	

Message width

Front destination	42.13	in.
Front route		in.
Curbside destination	27.96	in.
Rear route		in.

Electrical

Multiplex system

Manufacturer	I/O Controls
Model number	CV-BCM-ARBOC-02

Batteries

Manufacturer	Alliance Batteries
Model number	Group 31
Type	1520 CCA (2 Batteries)

Communication system

GPS

Manufacturer	TDB
Model number	

PA system

	Manufacturer	Model number	Number
Amplifier	REI	700890	1
Microphone	REI	480015	1
Internal speakers	Mito Corporation	17-4006NU4	4
External speaker	River Park	MA3013LG	1

Energy storage (hybrid drive)

Type	N/A	
Number of cells		V
Battery pack voltage		V
Weight		lbs

Security camera system

Manufacturer	REI	
Model number		
Number of cameras	3	
Storage capacity	320gb	

Bike racks

Manufacturer	Sportworks
Model number	DL2

Fire detection system

Manufacturer	Fogmaker	
Model number		
Fire detectors		
Type (thermal or optical)	Thermal	
Number of detectors	3	

Automatic voice annunciator system

Manufacturer	TBD
Model and part number	

Annunciator LED sign

Number of signs	
Housing dimensions	
Character length	in.
Character height	in.
Character width	in.

GPS antenna

Manufacturer	TBD
Model and part number	

Automatic passenger counter

Manufacturer	TBD
Model and part number	a.
	b.
	c.
Sensor type	

Real-time bus arrival prediction system

	Manufacturer	Model number
Router		
Cellular modem		
Charge protection		

Electronic tire pressure monitoring system

Manufacturer	
Model number	

Electronic brake stroke/wear indicator system

Manufacturer	N/A
Model number	

NOTE: All information above is accurate to the timeframe upon submission. The Agency reserves the right to update above data if changes occur, upon consultation with the customer.