

Major changes liberate the small bus concept

ARBOC Mobility introduces its third variation on the theme — the *Spirit of Liberty*

By David Hubbard

Built on the same engineering and manufacturing principals, the differences between Spirit, Freedom and Liberty become eminently clear with the newest model from ARBOC Mobility, Middlebury, IN.

The company kept this project particularly quiet during its development, sharing only the most salient points with the promise of absolute confidentiality. ARBOC Mobility promised to at last reveal all the details at the unveiling scheduled for APTA EXPO 2011 in New Orleans, LA. For now, *BUSRide* can at least offer up a few of the secrets.

ARBOC Mobility worked eight years to perfect its initial concept of the low-floor paratransit, which debuted in 2008 as the *Spirit of Mobility*, beginning where minimum ADA requirements end. The company conceived the low-floor cutaway to provide Random Access, easy and equal access for all passengers, including those requiring walkers, wheelchair and scooters.

ARBOC Mobility president Jim Bartel says the ARBOC Mobility vehicles not only comply with the American with Disabilities Act, they embrace the spirit and full intent of the law. The concept of Random Access allows free movement within the bus for up to six wheelchair passengers.

"We successfully met our own challenge to develop a rear-wheel drive, low-floor cutaway bus with an entry ramp



Above: The unveiling of the Spirit of Liberty at APTA EXPO 2011 will answer all the questions.



Below: This is a typical low floor seating configuration for the Spirit of Liberty with two wheelchair positions.

Preliminary Specifications

Length	28,30,33 ft.
Wheelbase	150,170,203 in.
Fuel Capacity	55, 70 Gal.
Engine Options	Cummins ISB 240 HP.
Transmission	Allison B2200
Passenger Capacity	up to 37 seated
GVWR	25,500 lbs.
Height	116 in.
Width	100 in.
Headroom	79 in. min.
Brakes	Hydraulic
Floor	Low
Wheelchair Cap.	Up to 4 locations, each 60 in. long
Random Access	

and no steps anywhere in the passenger area," he says. "We did it without relying on a drop-box transfer case."

The *Spirit of Freedom* followed in 2010, adapting the guiding principle of Random Access to a low-floor vehicle to accommodate commercial shuttle markets at a lower price point. With that said, ARBOC Mobility says in response to market demand, it is sending a *Spirit of Freedom* bus to Altoona for testing in the five-year category.

"Smaller transit agencies want a simpler bus," says Bartel. "We heard the message."

Now comes the *Spirit of Liberty*, differentiated from its two sibling vehicles by the fact that this low-floor bus is a pusher. A 6.7-liter Cummins ISB diesel engine coupled to an Allison five-speed transmission powers the bus from the rear. Electric shift is a standard feature, as is Multiplex wiring and the latest technology in on-board diagnostics and real time displays for the driver.

Bartel says while his team experimented with the front engine approach, it simply could not provide the functional features necessary to make the *Spirit of Liberty* low floor concept a class leader.

"Existing chassis left us with a high driver compartment," he says. "We didn't want our passengers separated from the driver sitting above in a mezzanine area."

To achieve this functionality ARBOC Mobility put the call out for the development of a unique chassis that a U.S. manufacturer will provide on an exclusive basis. Bartel told *BUSRide* he would reveal the name of that chassis partner at the APTA EXPO unveiling.

ARBOC Mobility has increased the GVW of its new model to 25,500 pounds, putting the *Spirit of Liberty* in a class all its own, according to Bartel.

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"The challenge to this concept was to come up with a low floor throughout that could provide the functional space we were after," says Bartel. "Conventional construction and manufacturing just didn't work."

The solution is a one-piece structural composite floor molded in vinylster that weighs in at a mere 800 pounds. This structural floor will be bonded and bolted to the high strength steel chassis, the innovative structure reduces the overall weight by over 2,000 pounds.

"This light composite material is highly reliable, more flexible and extremely durable," says Bartel. "Vinylester is impervious to moisture and other contaminants, so there is no need for undercoating."

Weighing up to 8,000 pounds less than any other pusher bus on the market, it easily accommodates the proposed FTA passenger weight specification increase, even when carrying up to 37 passengers, 14 standees and the driver.

The *Spirit of Liberty* product provides greater passenger seating capacity than any equivalent length low-floor pusher bus currently on the market.

Maintaining the trademark Random Access, the low floor slopes 2-degrees front to back with theater seating near the back. Passengers enter on a 34-inch wide, 1:6 ramp by either Ricon or Braun.

"What we wanted in terms of mobility for the Liberty model had to be as good as or better than the Spirit and Freedom models," says Bartel. "Where the ADA standard for wheelchair space is 48 inches, the Liberty provides 60 inches at every position."

He says the longer length is possible because of the unique body and chassis configuration and accommodates all of the latest securement devices from Q' Straint.

"We designed the Liberty model with the future in mind," says Bartel. "The open low floor passenger area with no steps, the oversize wheelchair positions and the incorporation of weight reducing technology address key operator concerns and will continue to be requirements for at least the next decade." ■