NORFOLK, VIRGINIA

S70 Low-Floor
Light Rail Vehicle

Virginia's first light rail system opened in Norfolk in August 2011 with a fleet of nine Siemens Mobility 70% low-floor light rail vehicles (LRV) running on 7.4 miles of track. The Tide spurred $509 million in transit-oriented development since the project began in 2007 with more development projected.

A steel carbody construction, fully bi-directional, double articulated, low-floor vehicle, ideal for street-level operation, and built in the U.S. Each six-axle light rail vehicle is equipped with two power trucks (one under each end) and a non-powered center truck.

The interior of the S70 LRV has been designed to maximize passenger space, incorporating wide doorways and a predominately knee-to-back seating arrangement.

Each S70 LRV is equipped with eight wide opening sliding plug doors all located in the low-floor area, with four to each side of the vehicle. The vehicle is also equipped with four designated wheelchair spaces allowing for priority seating to disabled passengers and doorway ramps to assist in the boarding and exiting of disabled passengers.

Performance and Capacity

Maximum operational speed	55 mph	88 km/h
Maximum allowable speed	58 mph	93 km/h
Service acceleration and deceleration	3.0 mphps	1.34 m/s^2
Emergency braking rate	5.0 mphps	2.24 m/s^2
Passenger capacity	68 seats 180 Passengers @ AW2 285 Passengers @ AW4 4 wheelchair spaces 2 bicycle racks	
Maximum operational gradient	7%	
Motor power rating	174 hp x 4	130 kW x 4
Catenary supply voltage	750 Vdc	

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To accommodate Norfolk's bicycle population, this S70 incorporates two bicycle racks located adjacent to each doorway. The door spacing has been optimized to allow for greater passenger flow entering and exiting the vehicle, which ultimately decreases the station dwell times.

To maximize passenger comfort, each vehicle is equipped with two roof-mounted HVAC units per LRV.

The S70 utilizes a passenger information system consisting of operator and automated announcements, passenger-operator intercoms, interior and exterior electronic destination signs, as well as interior and exterior surveillance system for increased passenger safety.

Each LRV is electrically powered from an overhead catenary system (OCS) and for Norfolk operates at speeds up to 55 mph, carrying up to 230 passengers in each vehicle with the ability to operate in multiple vehicle consists (up to four). These light rail vehicles remove automobiles off the road, in turn helping cities decrease their CO2 emissions.

Vehicle Dimensions and Weight

Length over coupler	93.6 ft	28530 mm
Width	8.7 ft	2650 mm
Height with pantograph (locked down)	12.7 ft	3870 mm
Maximum pantograph height (up to)	23 ft	7010 mm
Vehicle empty weight	99,500 lbs	45130 kg
High-floor section above TOR	2.2 ft (with 1 step plus slight ramp)	670 mm
Low-floor section above TOR	1.2 ft (threshold) 1.3 ft (center)	356 mm (threshold) 396 mm (center)
Minimum turning radius	82 ft	25 m
Vertical curve, crest	820 ft	250 m
Vertical curve, sag	1,150 ft	350 m
Track gauge	4.7 ft	1435 mm
Wheel base (power trucks) (center truck)	6.2 ft 5.9 ft	1900 mm 1800 mm

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