



*MicroWay*TM LRT, BRT & streetcar alternate

**The Green
Option**

Practical & affordable alternate is now available!

ROAM Transport Systems, Fort Worth, Texas

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U.S. PATS. 6,039,135, 6,401,625, 6,435,100, 6,615,740, 6,742,458, 6,834,595, 6,837,167, & 7,926,425 B2

OTHER U.S. & INTERNATIONAL PATENTS PENDING

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ROAM graphics & photos

5-15-15

Presentation Covers

Major problems with current transit systems

***MicroWay* system – The only *affordable* alternate**

***MicroWay* advanced capabilities & advantages**

Serious LRT & BRT Guideway Problems

Not light weight – *Must support 149,000-lb cars*

- Heavy-duty bridge structures needed for elevated track

LRT Guideway – Railroad-type grade, ballast, rails & cross-ties

Right of way – Dedicated ROW often needed – 44-ft for dual track

- LRT – 25-ft on city streets (Typical) Plus side trolley wire posts
- LRT – On-street lines *often take two traffic lanes*



Heavy-duty & costly structures



Massive support columns



Multiple traffic lanes lost for LRT

Critical Cost & Time Impacts

LRT, BRT & Streetcar systems

High initial cost – \$40 to \$100M/mi (US)

At-grade LRT - \$40 – \$100M/mi – (Avg. \$45M/mi)

BRT – \$2 TO \$25 M/mile

Streetcar systems slightly lower

(Typically \$16 - 40M per lane-mile)

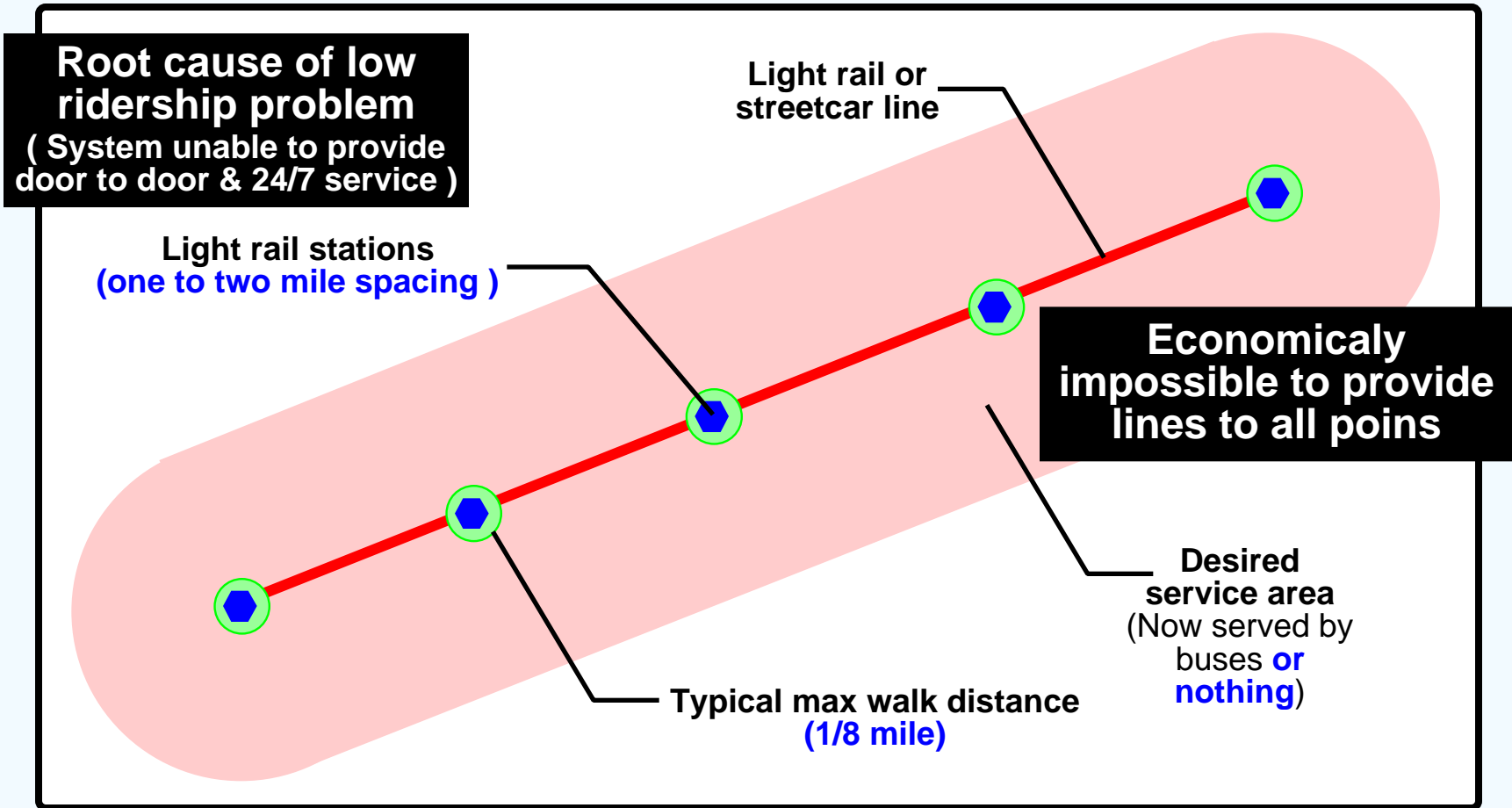
High O&M costs – 15 - 25% from fares - *No Positive ROI*

Long wait time – Often 6 to 12 years

- Heavy construction required
- Long and major traffic disruptions for installations

Fixed Route Transit “Last Mile” Problem

Service *has low appeal* to most people

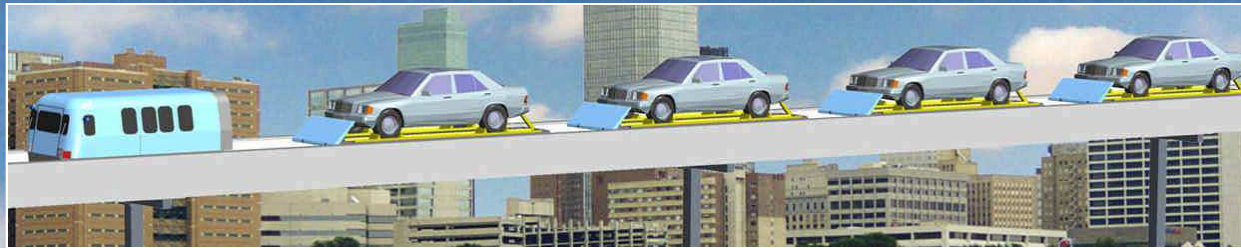


Only the carless & a few others use fixed route transit

To date, expensive BRT has offered the only partial solution

LRT, BRT & Streetcar Alternate

Superior performance & capability in small space & at low cost



CarTrain[™] service for small & medium size automobiles



Ultralight *MicroWay* passenger transport train on elevated *SuperWay*[™]
(Mechanically-coupled train operated by on-board motorman)

Expanded *MicroWay* Capability

All LRT, BRT & streetcar capabilities plus

- Small, elevated *SuperWay* guideway
 - Serve both *MicroWay* mass transit trains & *CarTrains*[™]
 - Small turn radii (30-ft) for easy over the street use
 - Electric power from *SuperWay* natural gas generators

CarTrain small to medium size personal car travel

- Same *SuperWay* as mass transit
- Electrical *SuperWay* operation
- Full trip in your own car!
- Dualmode capability

Easy expansion – Affordable extension throughout area

- Use available bridges or new, lightweight suspension bridges
- No traffic lanes eliminated
- Minimal installation impact

Go-anywhere (Including up hills) – Cars use rubber tires

Major *MicroWay* Advantages

No obstructions in streets

- No passenger load/unload platforms
- No rails embedded in traffic lanes to hinder driving
- No street vehicles to obstruct or endanger automobile traffic
- **No traffic lanes eliminated**
- **Minimal installation impact**

No future Problems with street resurfacing

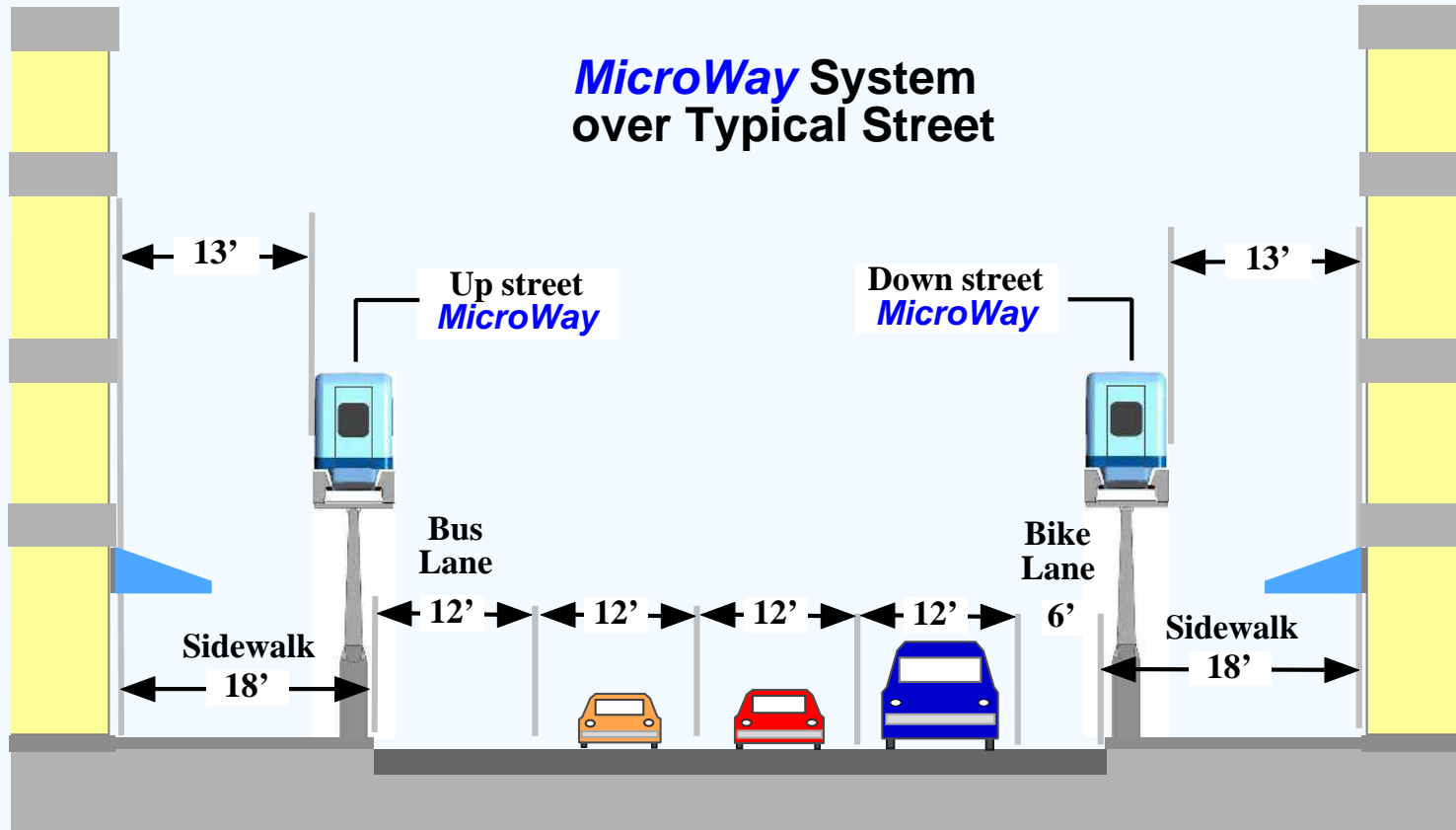
(No embedded rails in way of street repairs)

No unsightly overhead catenary electrical wires

- Minimizes visual obstruction & avoids wire icing problems

Dualmode eliminates “**last mile**” problem

MicroWay Easy Fit over City Streets



One example Installation

MicroWay Mass Transit Service

MicroWay – Affordable urban mass transit

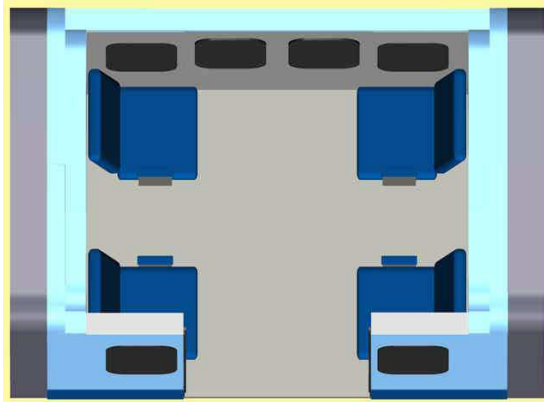
- Whisper-quiet smooth ride
- **Many passengers seated**
- Grade-separated for safety
- Safe, derail-proof design
- **All-weather** service
- 65-mph top speed



65-mph ultralight MicroWay mass transit train

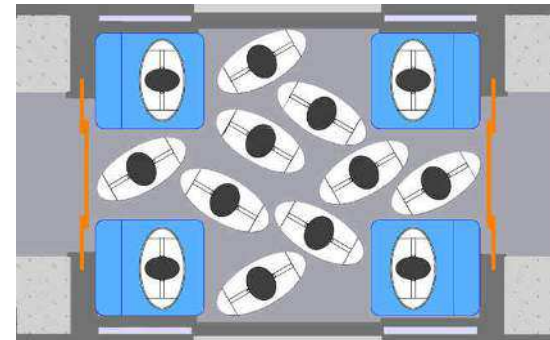
- Service in **42 months**
- All-electric operation
- Use **street** right-of-way
- Ultra-low noise
- Motorman **manual** control
- Ultra-low **25% LRT cost**
- **6X at-grade LRT capacity**

MicroWay – Small, Ultra-light, comfortable SkyCoaches



MicroWay SkyCoach Interior

- **3% LRT** car weight
- Self-propelled
- Long-life stainless
- Rubber tires
- Air suspension
- Air conditioned
- 13- passenger cars



MicroWay coaches carry up to 13 and seat from four to six passengers

Up to 25-car trains – Up to 325 passengers per train

Superior *MicroWay* Performance

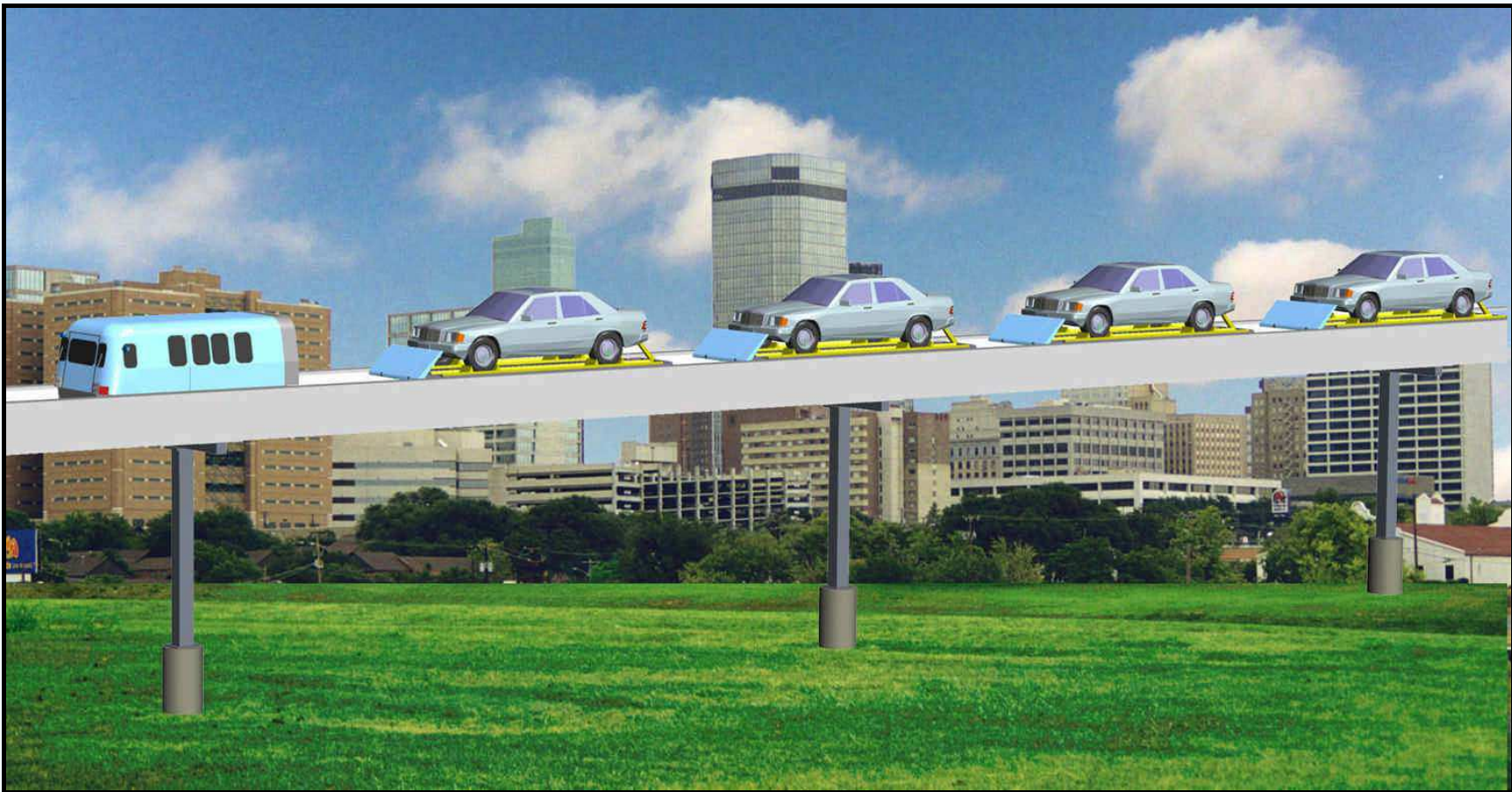
Passenger performance

- High-speed – **65-mph** – Short trip times!
- **High** passenger capacity
 - **14,256 pphpd** (Typical light rail **200-ft** station length) (23,375 with 300-ft stations)
- Short wait times – As short as **42 seconds**
No switching delays – Full-speed, car-based switching

Personal automobile travel performance

- High-speed – **65-mph** – Short, in-city trip times!
- **No street or freeway traffic delays**
- Fast door to door car travel – Solves “**last mile**” problem!

MicroWay CarTrain[™] Dualmode Service ***Near-term Freeway Congestion Relief***



- **Cars drive on and off at stations at the same time**
- **Small to mid-size cars flow at constant 65-mph speed**

SuperWay – Self-funding Alternate that Works

- Elevated steel *Superway* over any public right of way
 - Electrically-powered – Low pollution
 - Rubber-tired wheels in enclosed wheelway tubes
 - Silent service
 - All-weather service
 - Up and down hills
 - Low-cost
 - Small, separated wheelway tubes for low visual obstruction
- Little new right of way – Minimum land use
- Serves ALL users – **TAKES TRAFFIC OFF ROADS!**



Minimal sky blockage – No wide elevated conventional train shadows



Open-center *Superway* casts small shadow

U.S. Patent 6,837,167

Low risk – Current, proven technology!

***MicroWay* is Available NOW!**

***SuperWay* installation**

- ***SuperWay* engineering – Immediate start**
- **First production *SuperWay* sections deliver in 12 months**

***SkyCoach* production**

- **Start within 12 months**
- **Deliveries within 18 months**

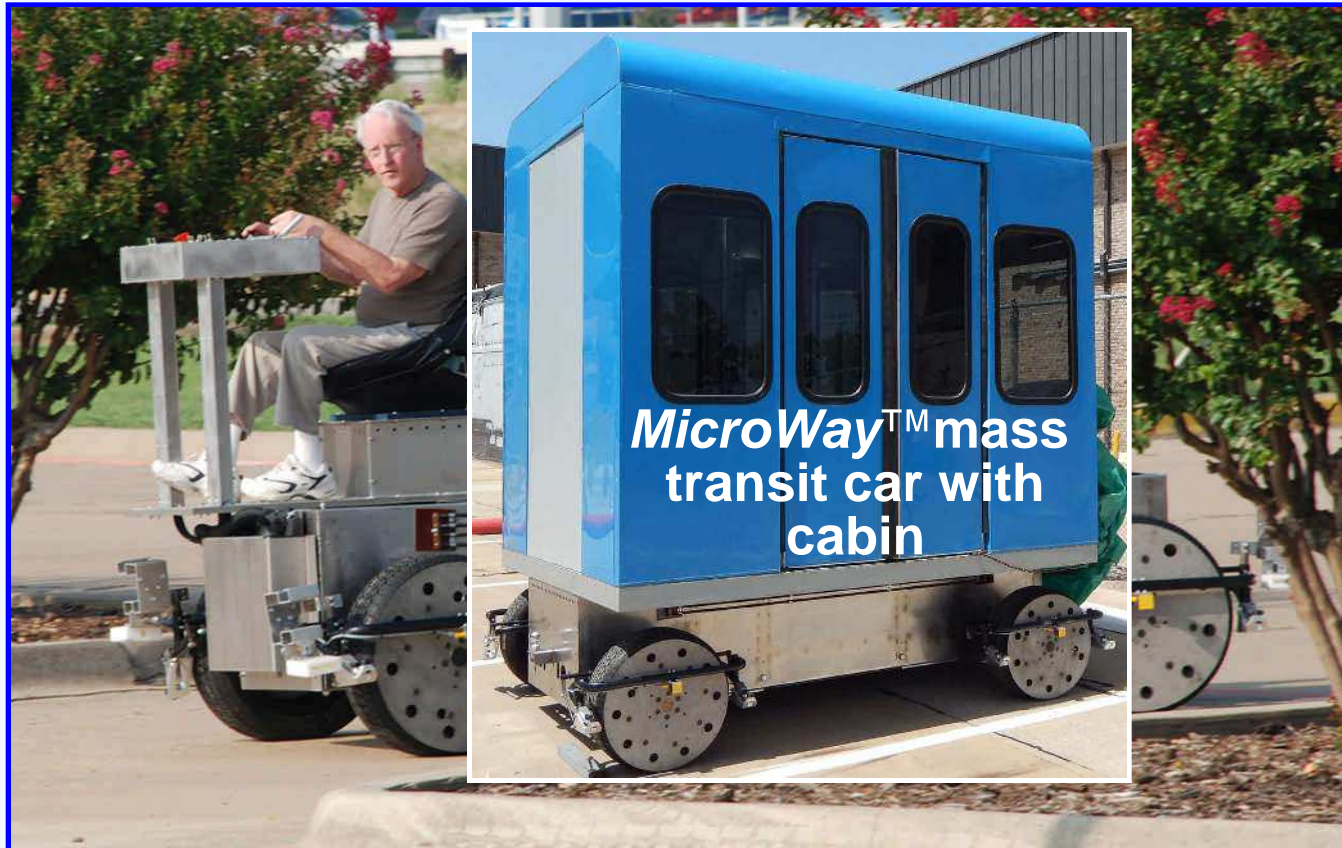
First service within *42 months* – (Manual control)

No waiting for extensive new development!

Demo system operating

Prototype Test & Demo Vehicles

Road and *SuperWay* tested



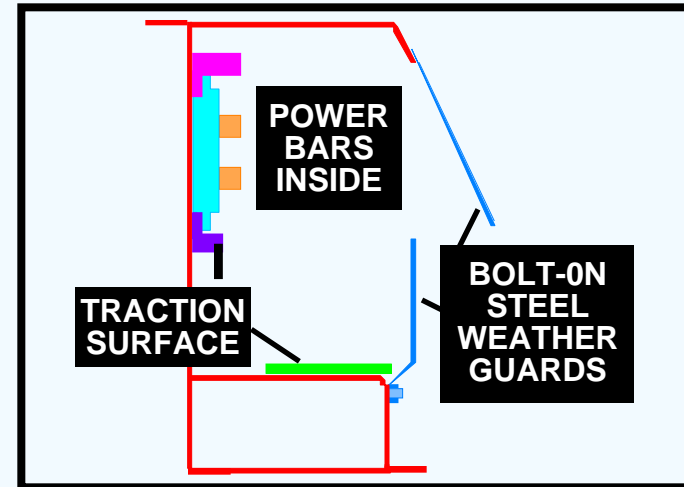
Hybrid dualmode car chassis unit in test & transit demo car
(Dualmode version operates both on *SuperWay* & streets)

Not just a “paper” system – It’s real and here!

Low-cost, All-weather, Enclosed *WheelWays*

- Low-cost *WheelWays*

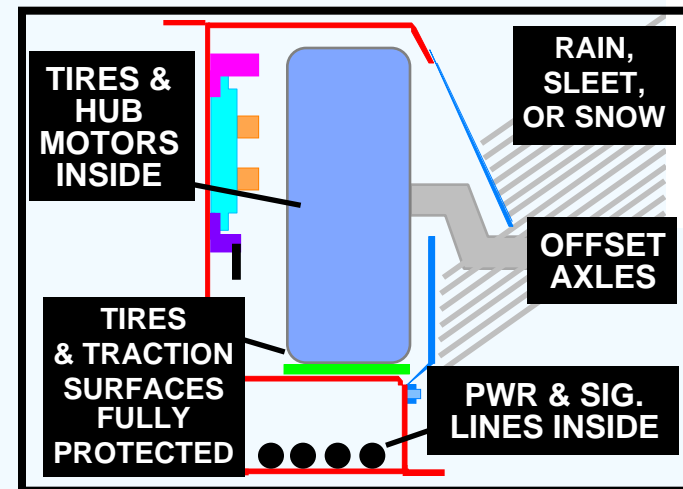
- Parts cut from flat steel
- Machine-welded construction
- Low material & labor costs
- Bolt-in electric power bars
- Truck guideway sections to site



Single wheelway cross-sections

- All-weather, *WheelWays*

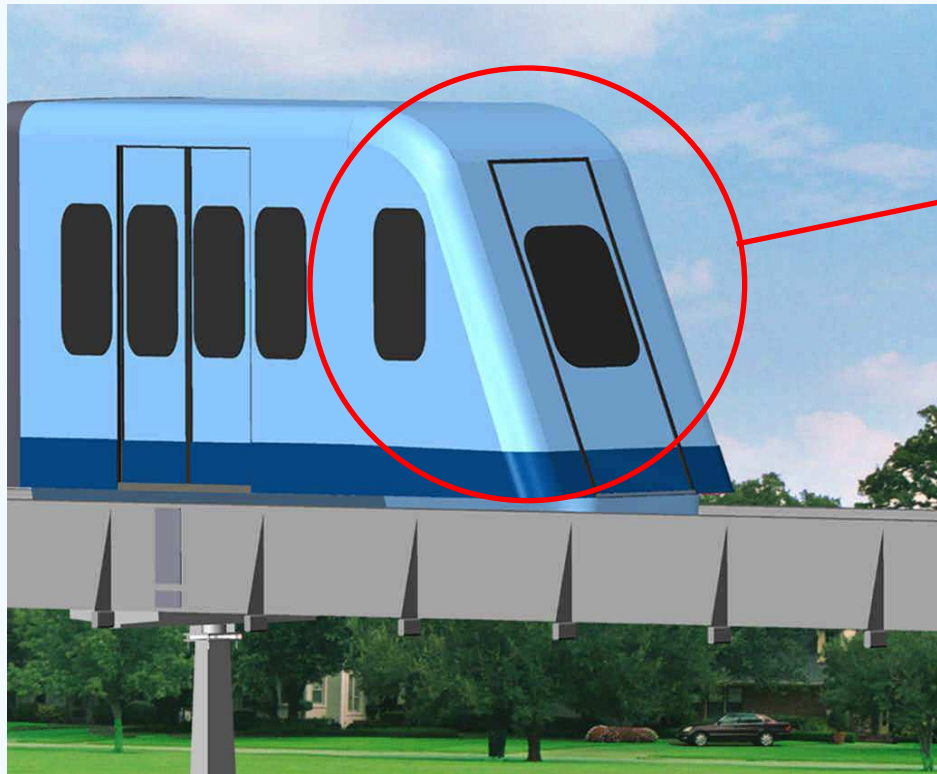
- Wheels & power collectors inside
- Protected electric power bars
- Dry & ice-free traction surfaces
- Safe operation in any weather
- Whisper-quiet operation



WheelWays & cross-members form self-supporting “U” structure

Conventional off-the-shelf Train Control Used

Used on light rail systems for over a century

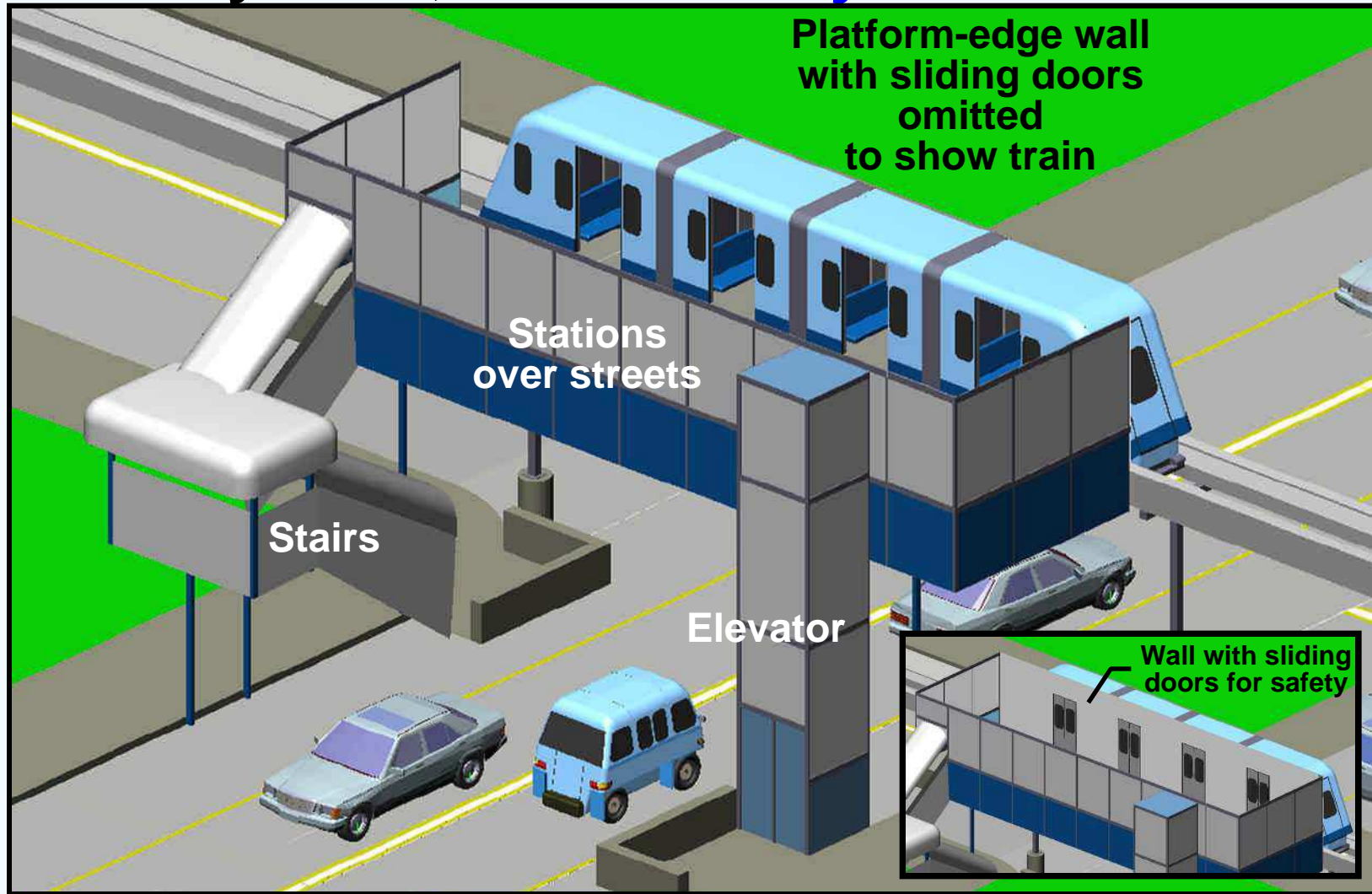


Motorman
in
lead car

**AUTOMATED
AFTER
FOUR YEARS**

- Manual speed and brake controls
- Precise **in-cab signaling** for close train spacing

Factory-built, Modular *SkyCoach* Stations



*MicrWay*TM mass transit train at elevated, over-street *SkyCoach* station

- Low-maintenance stainless-steel
- Low cost
- Minimum street impact

SkyCoach™ Step in and Sit Entry & Exit

- **No center aisles!**
 - **Fast entry & exit**
 - **Short station dwell times**
- **Ample leg room**



Cabin Interior View

All cars are wheelchair-compatible

***SkyCoaches* offer Safe Escape**

Unaided escape for all (including wheelchairs) without rescue personnel



- **Full-height escape doors in ends of coaches**
- **Open-mesh escape walkway between rails**
- **Covered electric bars**



Upward view through walkway

Technology Summary

Unique, patented new combination of proven technology (8 patents)

Enclosed stainless-steel wheelways - US Pat. 6,039,135

- Simple welded steel factory fabrication
- Standard power rails

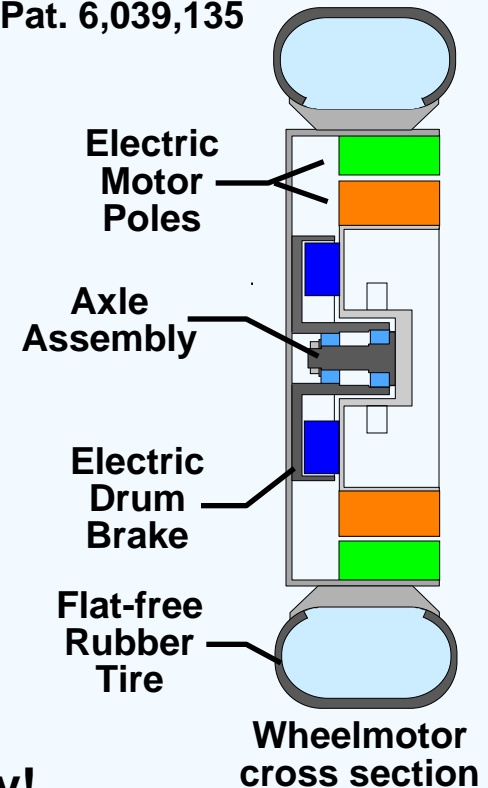
Flat-free tires – Current technology

Permanent-magnet electric motors

- Current commercial motor technology
- Electric motor wheels – Some electric cars

Car-based steering & switching

- Smooth *non-contact* electronic steering
- Switching – By cars as on conventional freeway!



Only the combination & SuperWay are new!

***MicroWay* Low-risk Solution**

Revolutionary, but entirely off-the-shelf, proven technology use

- **First systems use manual train control**
Control **proven** in transit and railroad systems
- **No exotic new technology**
All technology **proven** in transit and auto systems*
- **Guideway is only really new element!**
(And it is a simple welded steel structure)

* Future automated systems also employ proven aircraft technology

Future “Last Mile” Problem Solutions

Fully Automated, 24/7 services in 48 Months



PAT service

Automated, Personal Automated Transit Direct, Station to Station Service on *SuperWays*



Automated CarFerry service

Automated, CarFerry Direct, Station to Station Service on *SuperWays*

MicroWay Summary

The Green
Option

Performance – Beats LRT, BRT or Modern Streetcar

- Up to **23,375 pphpd** (300-ft stations) – 14,256 pphpd (200-ft stations)
Conventional monorail capacity = 7,500 pphpd
- Shorter trip times • Bus-type hill capability • Dualmode serves more

First service – *Within 42 months!* – (LRT type manual control)

- Much less than typical monorail, LRT & BRT – **No funding delays**

Total system cost – 15 - 25% of typical LRT, BRT or Streetcar

- Local funding and control • **No on-going operation subsidies**

Environment friendly – *Silent operation* – No clanging bells

- No construction or operating impacts to business or street traffic
- No earth moving • No added right-of-way • **Low emissions**

LRT, BRT, & Streetcar Alternate *Available NOW*

The only practical
rail alternate!



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21st Century Transport!

- *Unprecedented* level of service
- Low transportation user costs

**Near-term & affordable solution to
traffic & air pollution problems**

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