



MicroWays™ Solve Urban Public Transit Problems

Small Cars & People *above* Street ROW



Electrically powered

Streets free of streetcars and LRT

Clean Natural Gas Power – No Street Impact

MegaRail Transportation Systems, Inc.
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
OTHER U.S. & INTERNATIONAL PATENTS PENDING

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LRT/BRT & Streetcar Guideway Problems

Light rail is not light weight – Must support 149,000-lb cars

- Heavy-duty bridge structures needed

Guideway – Railroad rails or dedicated BRT pavement lanes

Right of way – Dedicated 44-ft ROW needed can be needed

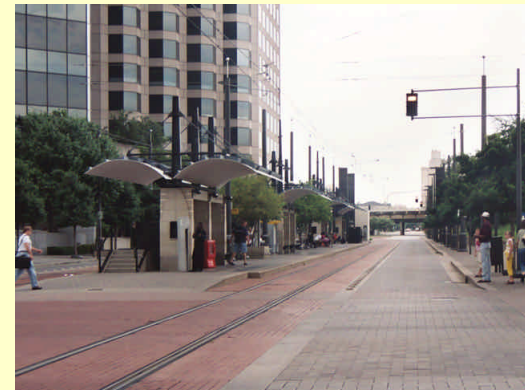
- 25-ft on city streets (Typical) Plus side trolley wire posts for LRT
- On-street lines **often take two traffic lanes & interfere with traffic**



Heavy-duty & costly structures



Massive support columns



Multiple traffic lanes lost

Much lower cost, less intrusive answer needed

Critical Cost & Time Impacts

LRT, BRT & Streetcar systems

High initial cost – \$30 to \$70 M / mile (US)

At-grade LRT - \$30 – \$70M/mi – (Avg. \$45M/mi)

BRT – \$2 TO \$25 M/mile

Streetcar systems slightly lower

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

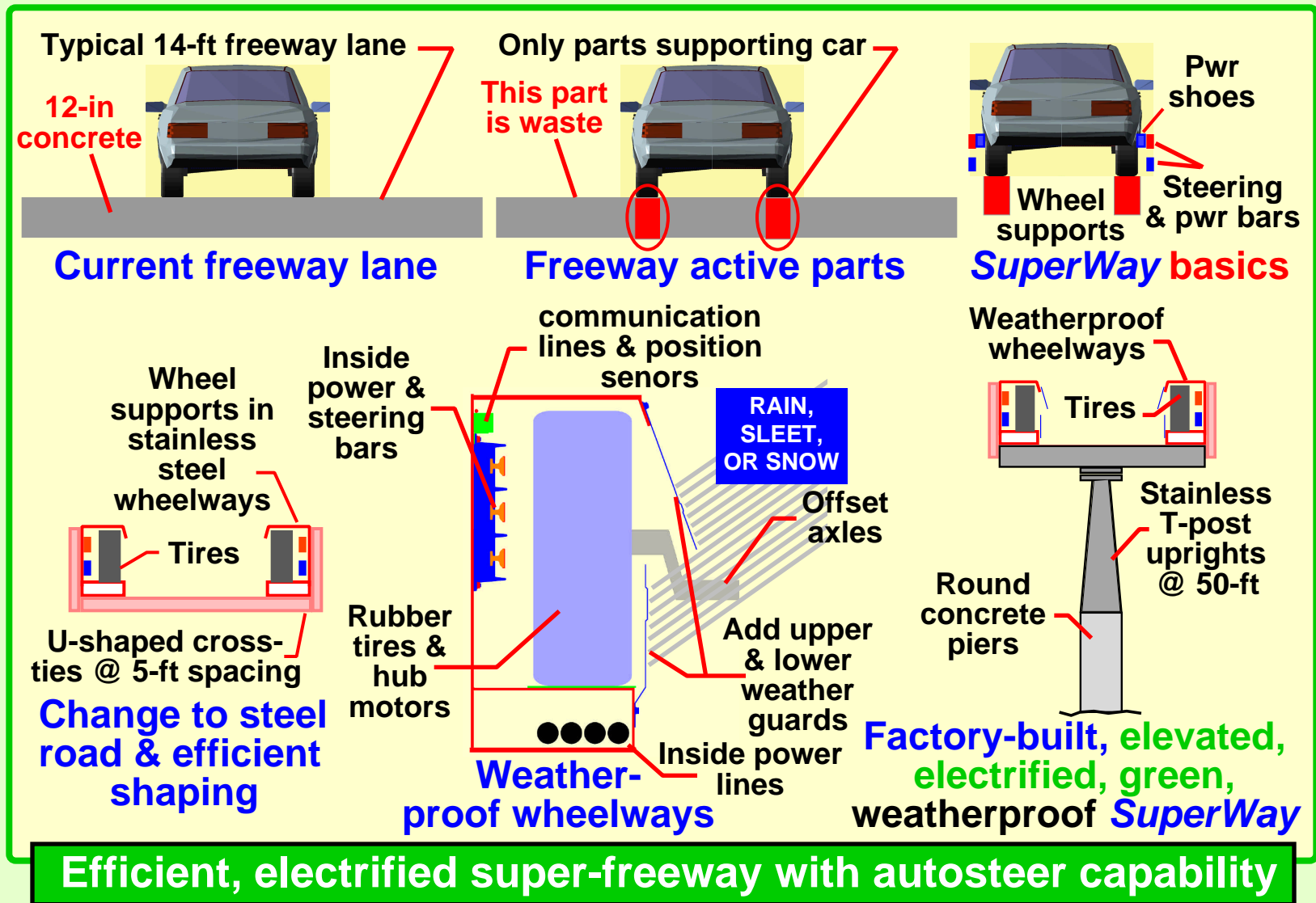
High O&M costs – 15 - 25% from fares - No Positive ROI

Long wait time – Often 6 to 12 years

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

**Federal money for any of
the above – Hard to obtain!**

Now The 21st Century *SuperWay*



SuperWay Urban Transport Solution

Real Solutions to Critical Problems

- **Freeway & street congestion reduced**
 - Reduced car traffic
 - Fewer slow buses to slow traffic
- **Critical air pollution problems solved**
 - **System fueled by clean-burning natural gas!**
- **Sustainable urban transit - Can pay for itself**
 - Up to 65-mph *MicroWay* public mass transit
 - 65-mph *MicroWay* electric *CarFerry*™ service
- **Nothing added to impede traffic**

MicroWay™ Builds on What We Have

Easy Adoption by Public Users

- **Elevated over street right of ways**
 - No interference with current streets
- **No new personal user vehicles needed**
 - Low-cost public system equipment purchases
 - Little change in current travel methods
- **Current & affordable technology**
 - Easy, current production methods
 - Current installation & construction methods

Affordable **65-mph** *MicroWay™* Mass Transit

Ultralight, All Weather Multi-mode *SuperWay*

Small,
10-passenger
coaches

Most people
ride seated

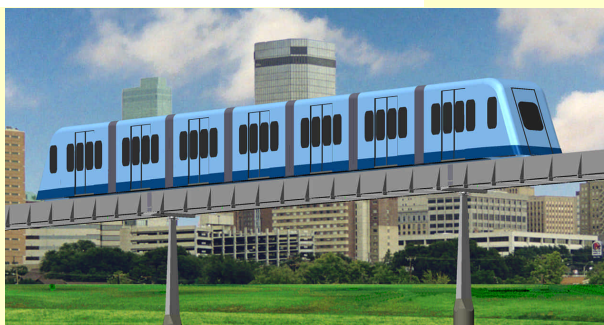
Rubber tires
in enclosed
wheelways

- Small, low-cost, low-maintenance, elevated *SuperWay*
- Silent & ultra-low air pollution – Natural gas powered
- No added right of way, ground or street traffic lane impacts

MicroWay™ Skycoach™ mass transit service

MicroWay – Affordable mass transit

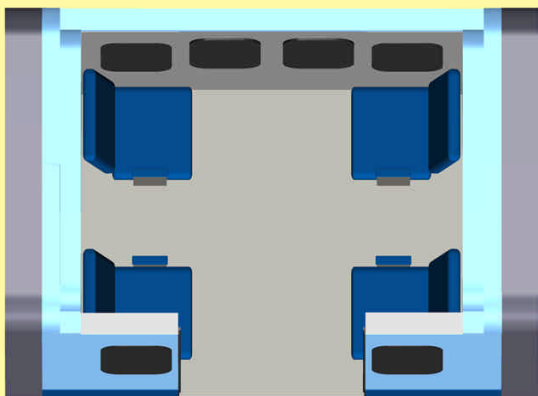
- Whisper-quiet smooth ride
- **Most passengers seated**
- Grade-separated for safety
- Safe, derail-proof design
- **All-weather** service
- 65-mph top speed



65-mph ultralight *MicroWay* transit train

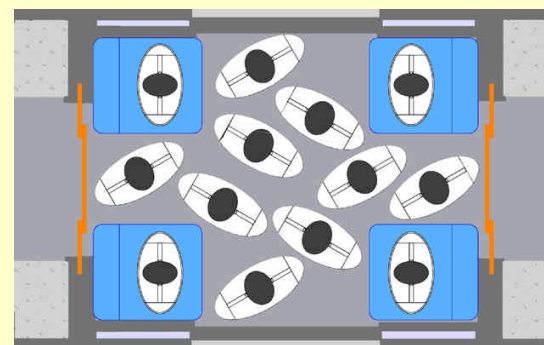
- Service in **42 months**
- All-electric operation
- Use **street** right-of-way
- Ultra-low noise
- Motorman **manual** control
- Ultra-low **20% LRT** cost
- **6X at-grade LRT** capacity

MicroWay – Ultra-light, comfortable *SkyCoaches*



MicroWay SkyCoach Interior

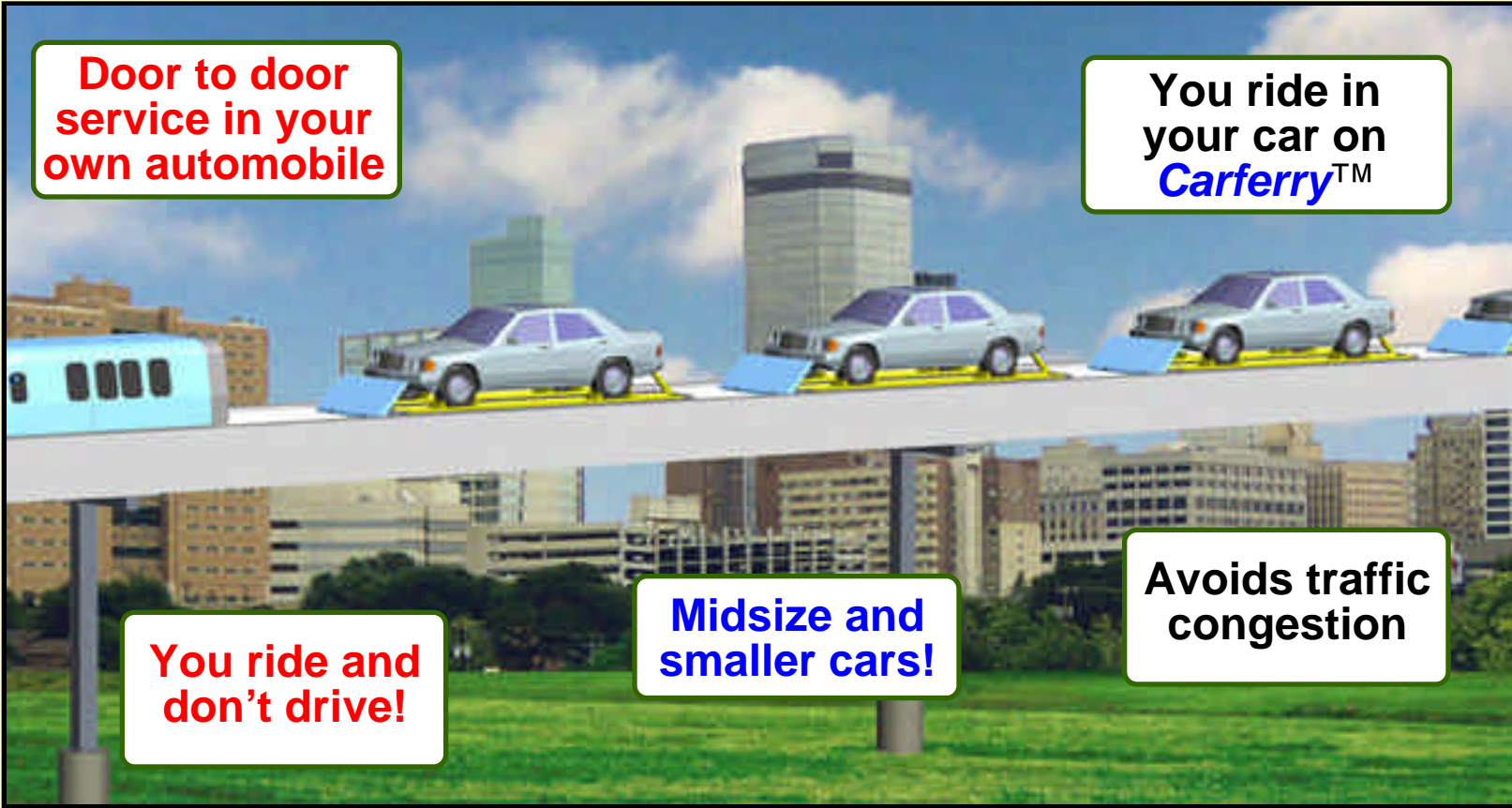
- **3% LRT** car weight
- Self-propelled
- Long-life stainless
- **Rubber** tires
- **Air** suspension
- Air conditioned
- 11- 13 pass. cars



Coaches carry up to 13 and seat four to six

16 to 25-car trains – 176 to 275 passengers per train

City-wide **65-mph** Dualmode Car Service



Door to door service in your own automobile

You ride in your car on *Carferry™*

You ride and don't drive!

Midsized and smaller cars!

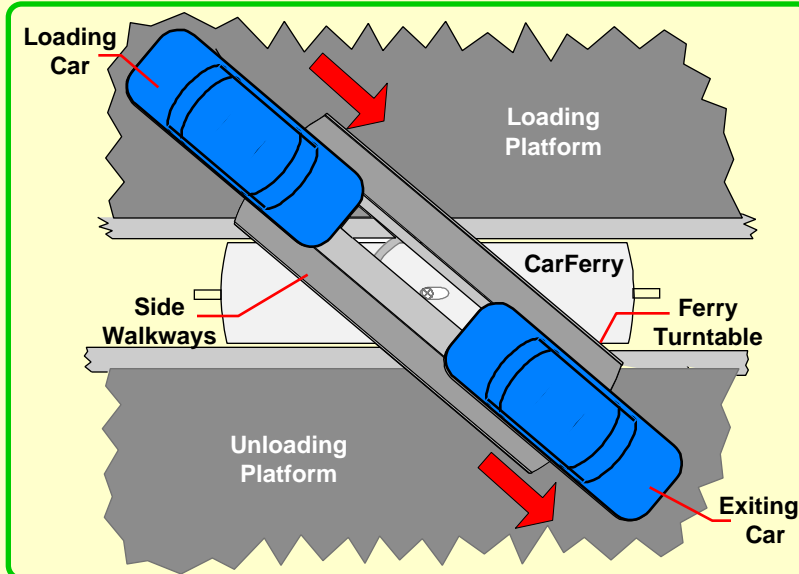
Avoids traffic congestion

- **Standard personal cars and passengers on elevated *SuperWay***
- **Silent & ultra-low air pollution – Natural gas powered**
- **Share same guideway as mass transit services**

CarFerries™ allow people to take their cars

Rapid (1-min) loading and unloading by car drivers at stations

CarFerries provide fast Load & Unload



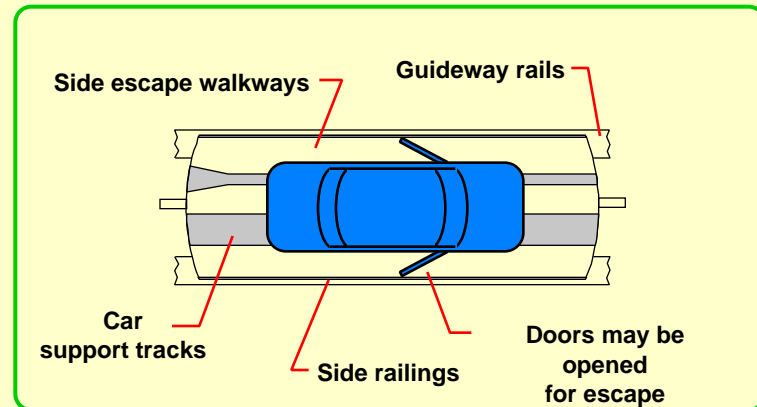
Car drivers drive their cars onto and off of ferries at stations

Easy as pulling into slant parking space or car wash

Car wheels automatically lock into place on ferry to hold car

- People in cars that need their cars
- People in **Skycoaches** who don't need cars

Individual **CarFerry** Safety Features

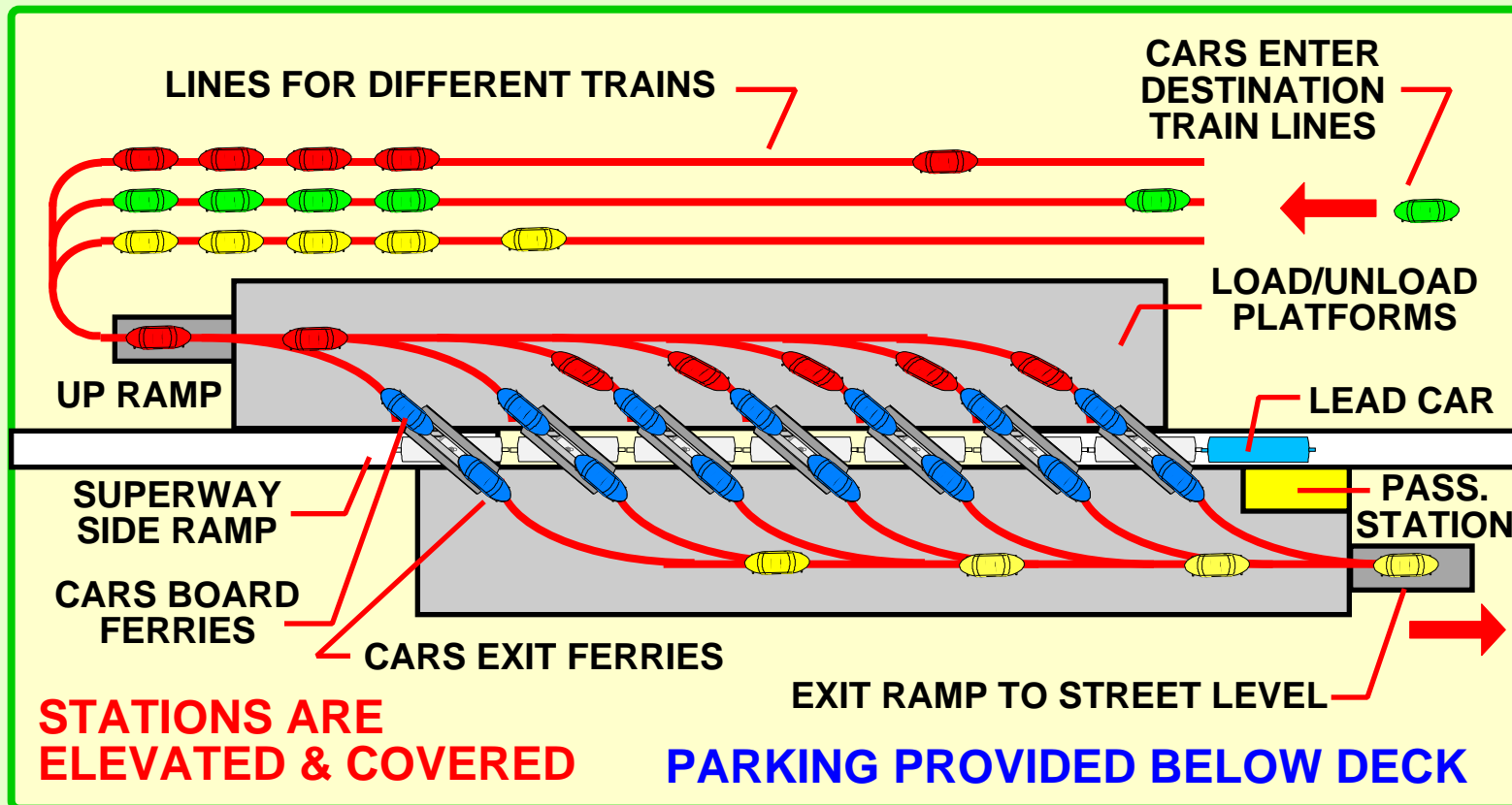


Ferry walkways enable passengers to access **SuperWay** center emergency walkways

Roll correction in curves for airliner ride comfort level

Sample *CarLiner*™ Station Arrangement

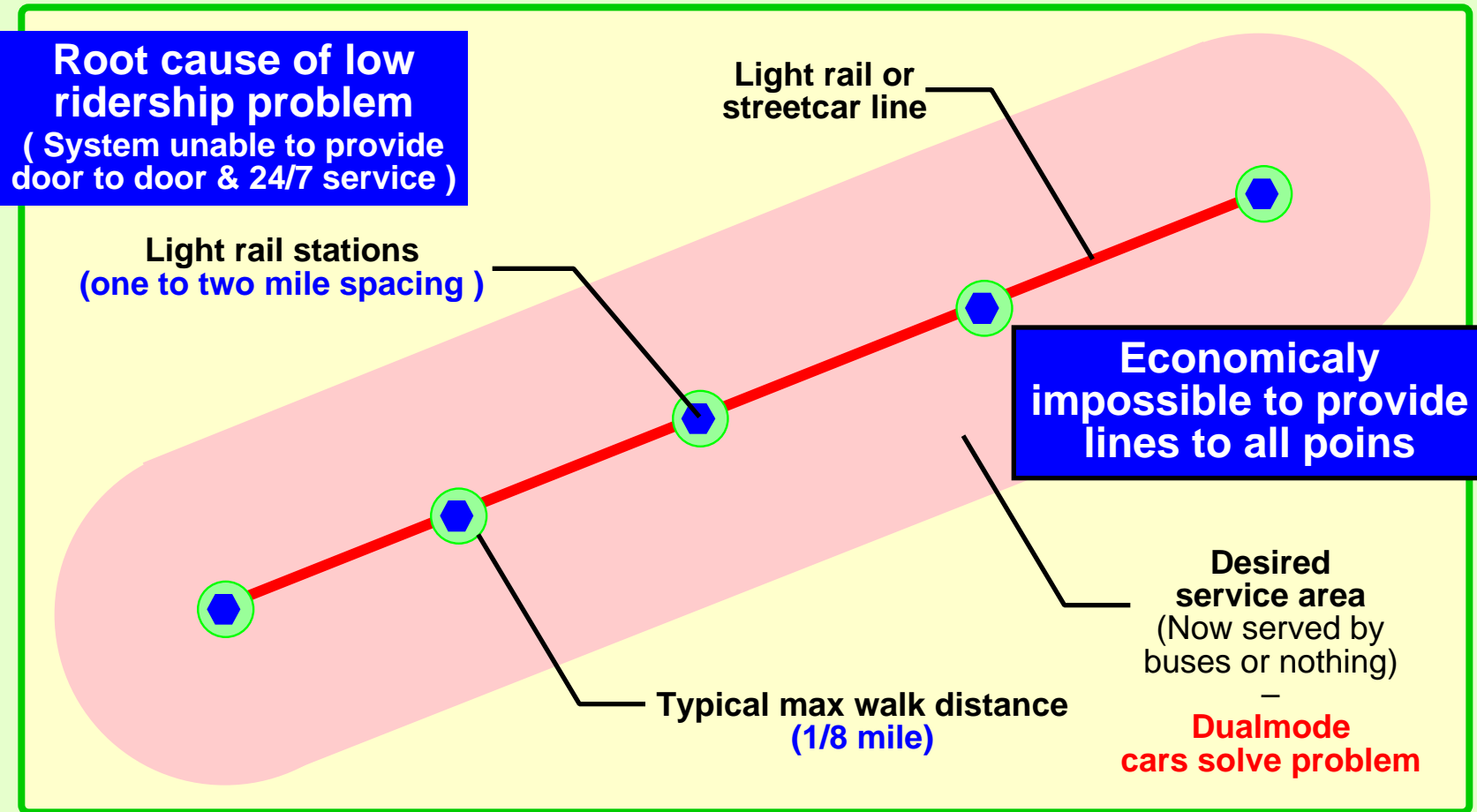
Short *Carliner* train shown to simplify illustration



Drivers enter line for desired route or destination
(Trains may take different *MicroWay* routes)

Dualmode Solves “Last Mile” Problem

Typical fixed route service does not appeal to most people



Only the carless & a few others use fixed route transit

Expensive BRT has offers only a partial solution

Expanded *MicroWay* Capability

All LRT & streetcar capabilities **plus dualmode cars**

- *SuperWay* stations – Over streets – Elevators / stairs in parking lanes
- *SuperWay* short turns (30-ft) to follow street corners
 - All Electric operation
 - Natural gas generators along lines

Dualmode personal car service – Full citywide service

- Shares passenger train *SuperWay*
- On & off-*SuperWay* transport
- Electrical *SuperWay* operation
- Normal car street operation

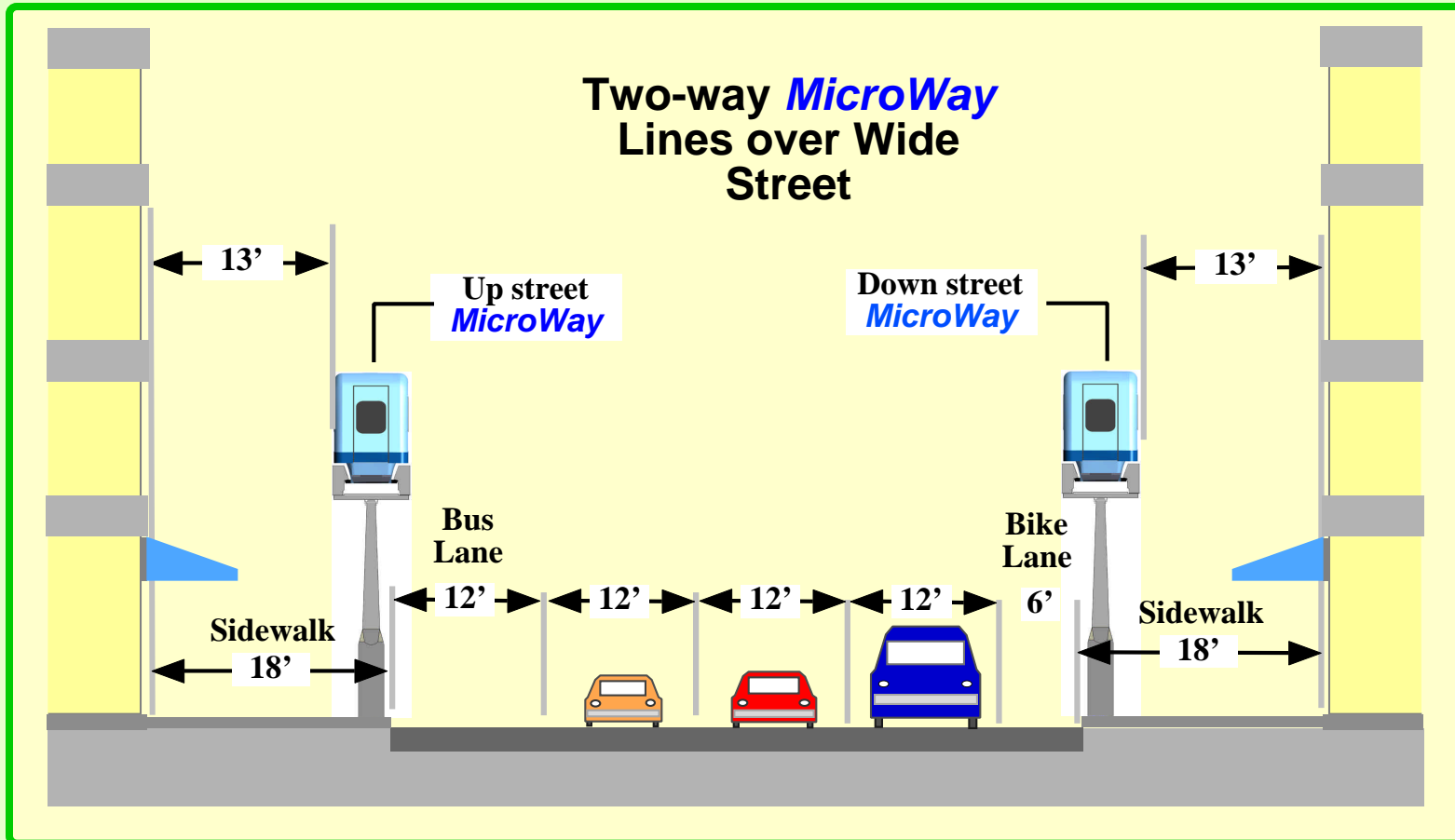
Easy expansion – Affordable extension throughout area

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

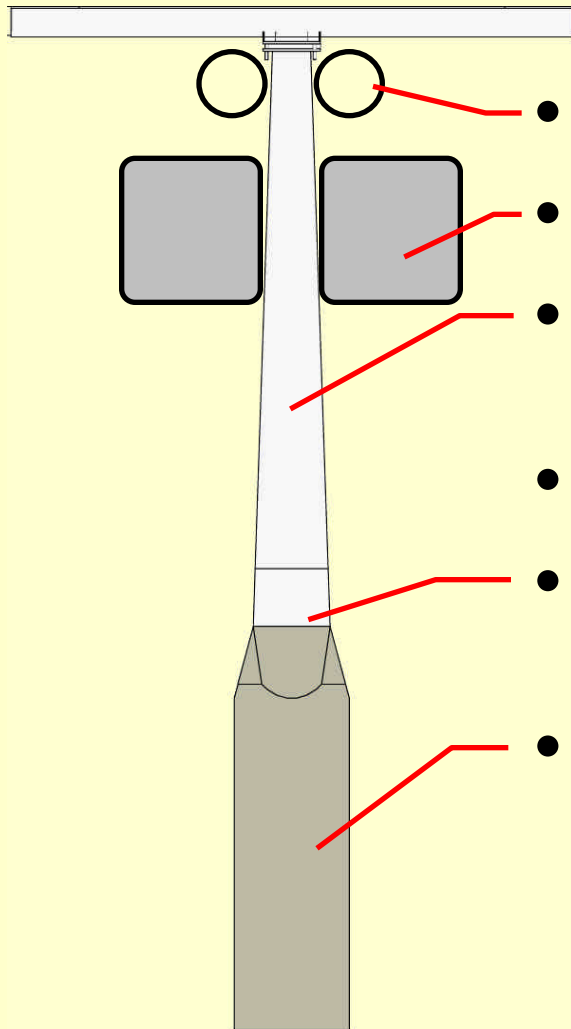
Go-anywhere (Including up hills) – Vehicles use rubber tires

PAT. PENDING

MicroWay[™] Easy Fit over City Streets

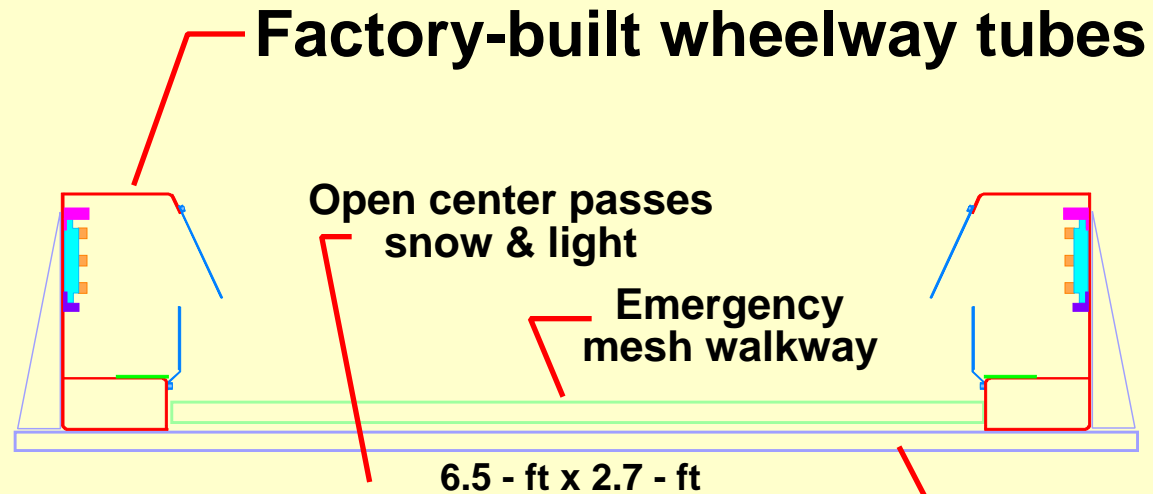


Ultralight, Low-cost Factory-built Columns



- Natural gas supply lines
- Dual gas-powered generators
- Stainless-steel factory-built columns – from steel sheet
- Cross-arm bolted on
- Sits over tapered spud on concrete base
- Base is 24-inch round poured concrete pier in ground (30-inch for dual guideway) (Slightly larger for steep curves)

Ultralight, Low-cost Factory-built *SuperWay*

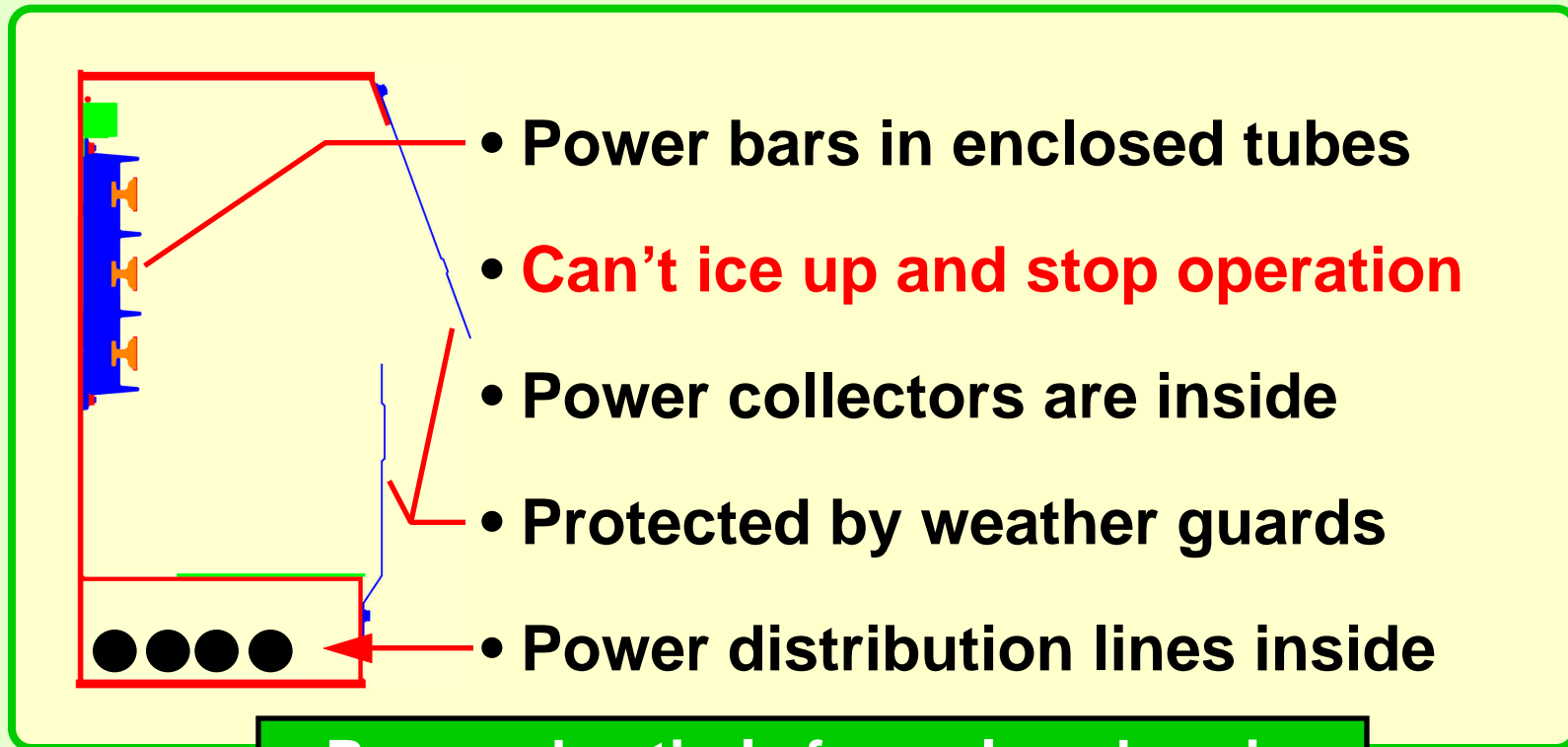


Factory-built cross members

- Plasma & laser-cut flat stainless-steel
- **Machine welded for low labor cost**
- Truck to site & lift onto uprights

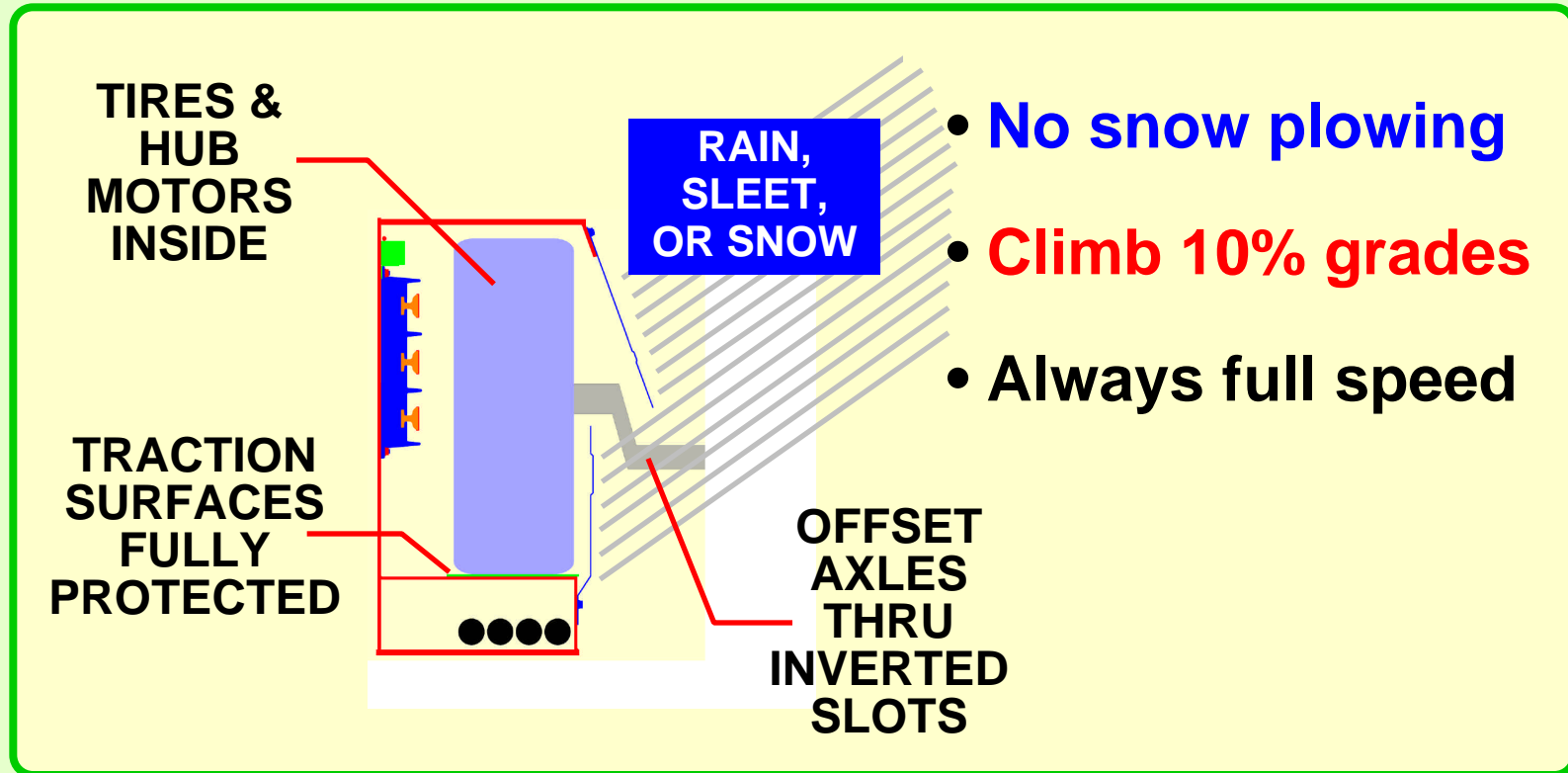
Electrically powered from protected bars

Weather-proof operation



Powered entirely from clean-burning natural gas from lines under guideway

Enclosed wheelways for **all-weather** operation



Perfect for winter weather service

MegaWay – Self-funding Alternate that Works

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



Minimum sky blockage – No wide elevated train shadows



Open-center *SuperWay* casts small shadow

U.S. Patent 6,837,167

Low risk – Current, proven technology!

Center Emergency Escape Walkway

Safe passenger emergency escape



- Welded stainless-steel wire mesh between tubes
- **Easy passage of light & snow**

Prototype Test Vehicle

In road and *SuperWay* proving



**Main chassis unit of hybrid dualmode tram lead car in test
(Dualmode version operates both on *SuperWay* & streets)**

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

Future “Last Mile” Problem Solutions

Fully Automated, 24/7 services in 52 Months



Automated *CarFerry* service

- Drive to *CarFerry* station
- Drive onto waiting *CarFerry*
- Select destination
- **Mid-size and smaller cars**
- Ride without driving to desired station
- Drive back to street and to destination



PAT passenger service

- Walk to nearest station - Any time of day
- Enter waiting car (up to four people)
- Select destination
- Ride, non-stop to selected station

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 electrical power buses

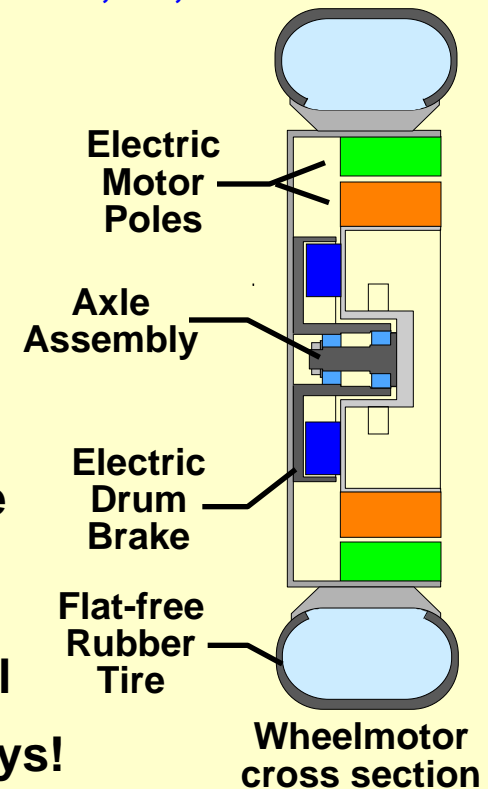
Flat-free tires – Current car tire technology

Permanent-magnet electric motors

- Current commercial motor technology
- Electric motor wheels – current electric car use

Car-based steering & switching

- Smooth non-contact electronic steering control
- Switching – By cars as on conventional freeways!



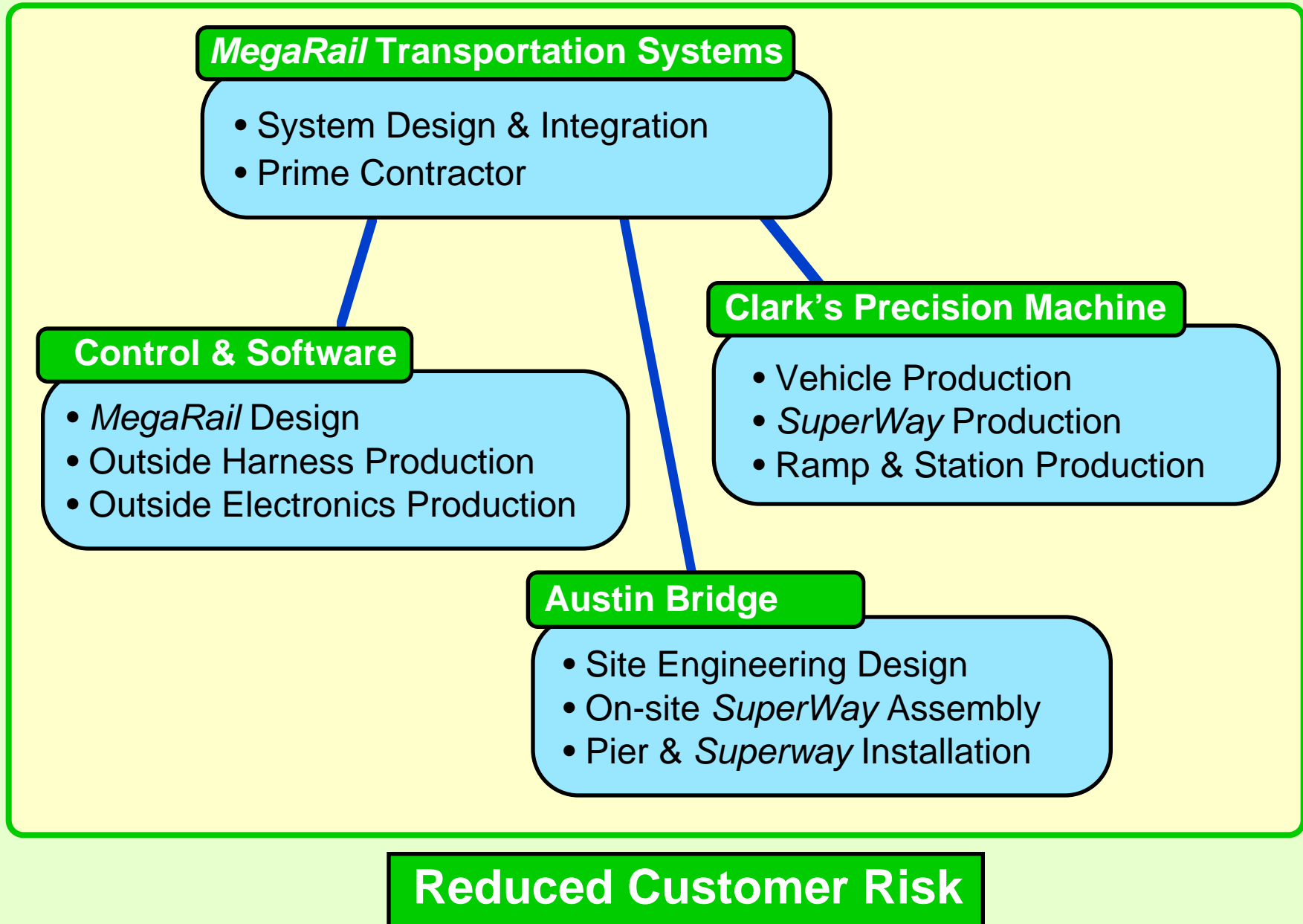
Only the combination & SuperWay are new!

MegaRail Staff is Highly-experinced

- **Experienced aircraft engineers & business personnel**
 - Experience level – 40 + years on far more complex systems
 - Managed 30,000 people, many vendors & \$4B+ contracts
 - Developed, & supported the USAF B-58, F-111 & F-16s
- **Staff understands long-term support**
 - Includes experienced logistics & vendor support people
- **More highly experienced personnel available**
 - Similar experience levels in all required fields

MegaRail team able to provide complete systems

Proven Industry Team



Major *MicroWay* Benefits

- **Near-term, low-cost transit & traffic solutions**
Public / Private partnerships possible
No more costly light rail projects!
- **Minimal physical & visual impacts**
Adds only small, stainless-steel *SuperWays*
- **Reduced commuting times & reduced cost**
- **Major reduction of traffic noise & air pollution**
Drivers find *MicroWay* lower cost and faster commute
- **All-weather travel – No rain, snow & ice impacts**

Win, win approach to problems!

MicroWay Summary

Performance – Beats any other approach

- Up to 6,500 cars / hour / direction – **More than 6-lane freeway!**
- Shorter trip times • **10% grade hill capability** • **Off-line stations!**
- **Mass transit train & dualmode automobile for full city service**

First service – Within 48 months! – (Train-type manual control)

- Joint private / local funding – **No Federal funding delays**

Total system cost – \$6 – 7M per lane-mile (Typical cost)

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

Environment friendly – Low emission – Uses natural gas!

- No earth moving • No new right-of-way • Noise free
- **No impact to street traffic capability**
- No power substations or electrical lines

- **Low Cost**
- **Proven Tech**
- **Low Risk**

Suggested, Low-cost, Low-risk Action

- Compare *MicroWay* with LRT & BRT
 - Cost per lane-mile
 - Area of city served
- Compare *MicroWay*, LRT & BRT total risk
 - Technical & schedule
 - Long-range cost risk
- See *MicroWay* prototype demo
- Request & evaluate *MicroWay* proposal

***MicroWay* Results**

- **Reduce street traffic – Use elevated alternate**
- **End freeway traffic jams**
- **65-mph, non-stop travel in our own cars**
- **65-mph, non-stop mass transit train service**
- **Gas-generated power for low air pollution**
- **All-weather travel – No rain, snow & ice impacts**
- **Avoid billions for light rail or BRT lanes**

Nothing else offers anything close!



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